AWARD/CONTRACT

1. This Contract Is A Rated Order Under DPAS (15 CFR 700)	Rating DOA4	Page 1 Of 30

2. Contract (Proc. Inst. Ident) No.	3. Effective Date	4. Requisition/Purchase Request/Project No.
W56HZV-07-C-0379	2007JUN14	SEE SCHEDULE

5. Issued By Code W56HZV

U.S. ARMY TACOM LCMC
AMSTA-AQ-ABGA
ROSALIE WILLIAMSON (586)574-8089
WARREN, MICHIGAN 48397-5000
HTTP://CONTRACTING.TACOM.ARMY.MIL

WEAPON SYSTEM: WPN SYS: 00

e-mail address: ROSALIE.A.WILLIAMSON@US.ARMY.MIL

6. Administered By (If Other Than Item 5) Code S2101A

DCMA MARYLAND
217 EAST RED WOOD ST
SUITE 1800
BALTIMORE, MD 21202-5299

SCD C **PAS** NONE **ADP PT** HQ0338

7. Name And Address Of Contractor (No. Street, City, County, State, And Zip Code)

GENERAL DYNAMICS ROBOTIC SYSTEMS
1234 TECH COURT
WESTMINSTER, MD 21157-3065

TYPE BUSINESS: Large Business Performing in U.S.

Code 0RK79 **Facility Code**

8. Delivery

☐ **FOB Origin** ☒ **Other (See Below)**

9. Discount For Prompt Payment

10. Submit Invoices (4 Copies Unless Otherwise Specified) To The Address Shown In: Item 12

11. Ship To/Mark For Code

SEE SCHEDULE

12. Payment Will Be Made By Code HQ0338

DFAS-COLUMBUS CENTER
DFAS-CO/SOUTH ENTITLEMENT OPERATION
P.O. BOX 182264
COLUMBUS, OH 43218-2264

13. Authority For Using Other Than Full And Open Competition:

☒ **10 U.S.C. 2304(c)(** 1 **)** ☒ **41 U.S.C. 253(c)(** 1 **)**

14. Accounting And Appropriation Data

ACRN: AA 21 72040000076N6N7EP633005255Y S20113 W56HZV

15A. Item No.	15B. Schedule Of Supplies/Services	15C. Quantity	15D. Unit	15E. Unit Price	15F. Amount
SEE SCHEDULE	CONTRACT TYPE: Cost-Plus-Fixed-Fee KIND OF CONTRACT: Research and Development Contracts				

15G. Total Amount Of Contract $7,494,869.63

16. Table Of Contents

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Contracting Officer Will Complete Item 17 Or 18 As Applicable

17. ☒ **Contractor's Negotiated Agreement (Contractor is required to sign this document and return** 2 signed **copies to issuing office.) Contractor agrees to furnish and deliver all items or perform all the services set forth or otherwise identified above and on any continuation sheets for the consideration stated herein. The rights and obligations of the parties to this contract shall be subject to and governed by the following documents: (a) this award/contract, (b) the solicitation, if any, and (c) such provisions, representations, certifications, and specifications, as are attached or incorporated by reference herein. (Attachments are listed herein.)**

18. ☐ **Award (Contractor is not required to sign this document.) Your offer on Solicitation Number** _____ **including the additions or changes made by you which additions or changes are set forth in full above, is hereby accepted as to the items listed above and on any continuation sheets. This award consummates the contract which consists of the following documents: (a) the Government's solicitation and your offer, and (b) this award/contract. No further contractual document is necessary.**

19A. Name And Title Of Signer (Type Or Print)

20A. Name Of Contracting Officer

DEREK MCALEER
DEREK.MCALEER@US.ARMY.MIL (586)574-8093

19B. Name of Contractor	19c. Date Signed	20B. United States Of America	20C. Date Signed
By _____ (Signature of person authorized to sign)		By /SIGNED/ (Signature of Contracting Officer)	2007JUN14

Name of Offeror or Contractor: GENERAL DYNAMICS ROBOTIC SYSTEMS

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
	SECTION B - SUPPLIES OR SERVICES AND PRICES/COSTS				
0001	SERVICES LINE ITEM SECURITY CLASS: Unclassified Contractor shall furnish all the supplies and services to accomplish the tasks for the basic effort specified in Section C "Scope of Work" Estimated Cost: $6,939,694.10 Fixed Fee: $ 555,175.53 Total Cost: $7,494,869.63 ACCEPTANCE: Destination INSCPECTION: Destination (End of narrative B001)				
0001AA	SERVICES LINE ITEM NOUN: INTELLIGENT GROUND SYSTEMS PRON: R372C230R3 PRON AMD: 01 ACRN: AA AMS CD: 63300549700 Inspection and Acceptance INSPECTION: Destination ACCEPTANCE: Destination Deliveries or Performance DLVR SCH REL CD: 001 — QUANTITY: 0 — PERF COMPL DATE: SEE SECTION F $ 1,500,000.00				$ 1,500,000.00

Name of Offeror or Contractor: GENERAL DYNAMICS ROBOTIC SYSTEMS

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0002	DATA ITEM SECURITY CLASS: Unclassified Technical Data as set forth in Contract Data Requirements List (DD Form 1423) hereinafter referred to as Exhibit A (End of narrative B001)			Not Separately Priced	
0003	DATA ITEM SECURITY CLASS: Unclassified Contractor Manpower Reporting (CMR) as specified in the Scope of Work Unit Identification Code: W4GGAA (End of narrative B001)			Not Separately Priced	

B.1 ESTIMATED COST, FIXED FEE AND PAYMENT

B.1.1 The estimated cost to the Government for performance of work under the Contract is set forth in Section B. In consideration of performance of the work specified under CLINs 0001, 0002 and 0003, the Government will pay the Contractor the Estimated Cost amount shown opposite CLIN 0001. The amount shown shall constitute the estimated cost for the purpose of the Contract Clause entitled "Limitation of Funds", but neither the Government nor the Contractor guarantee the accuracy of said estimate.

B.1.2 The contactor will be paid the fixed fee stated in Section B under CLIN 0001 for performance of work under the contract and in accordance with the terms of the contract clause entitled Fixed Fee (March 1997), FAR 52.216-8. The fixed fee together with the reimbursement of cost shall constitute full and complete consideration for the contractor's service in connection with the work required and performed under this contract.

B.1.3 Allowable costs shall be determined and payment thereof, shall be provided in accordance with the Contract Clause hereof entitled "Allowable Cost and Payment", (Dec 2002), FAR 52.216-7. Contractor may submit public vouchers every two weeks for payment under this Contract.

B.2 INSURANCE

The cost of insurance premiums is included in the overhead rate and insurance cost included herein shall not be an item for separate reimbursement under this contract.

B.3 PAYMENT

B.3.1 The contractor may submit public vouchers biweekly for payment under this contract. The fee will be payable at the time of reimbursement of cost at the same rate to such cost as the total fee of this contract bears to the total estimated cost thereof, subject to any withholding pursuant to provisions this contract.

B.4 FUNDING

B.4.1 The Government will provide funds under this Contract covering the estimated cost and Fixed Fee hereof on an incremental basis as provided for in the following funding schedule and pursuant to the Contract clause entitled "Limitation of Funds". It is estimated that the incremental amounts are sufficient for the performance of work in each of the cited periods. The Government may, at its discretion, allot such funds on an incremental basis within each fiscal year. The Contractor shall so plan and execute the work required by this Contract as to expend and/or commit funds compatible with the schedule set forth below. Whenever the Contractor has reason to believe that the funds allotted to this Contract for any cited period are either insufficient or excessive for the performance of work required in that cited period, the Government shall be so notified.

B.4.2 FUNDING SCHEDULE

PERIOD	AMOUNT
Award through 31 Oct 07	$1,500,000.00
1 Nov 07 through 31 Dec 08	$3,950,000.00
1 Nov 08 through Completion	$2,044,869.63

B.4.3 The amount of funds currently allotted to this contract is $1,500,000.00

*** END OF NARRATIVE B0001 ***

SECTION C - DESCRIPTION/SPECIFICATIONS/WORK STATEMENT

	Regulatory Cite	Title	Date
C-1	52.237-4000 (TACOM)	CONTRACTOR MANPOWER REPORTING (CMR)	FEB/2007

The Office of the Assistant Secretary of the Army (Manpower & Reserve Affairs) operates and maintains a secure Army data collection site where the contractor will report ALL contractor manpower (including subcontractor manpower) required for performance of this contract. The contractor is required to completely fill in all the information in the format using the following web address: https://cmra.army.mil . The required information includes the following:

(1) Contracting Office, Contracting Officer, Contracting Officer's Technical Representative;

(2) Contract number, including task and delivery order number;

(3) Beginning and ending dates covered by reporting period;

(4) Contractor name, address, phone number, e-mail address, identity of contractor employee entering data;

(5) Estimated direct labor hours (including sub-contractors);

(6) Estimated direct labor dollars paid this reporting period (including sub-contractors);

(7) Total payments (including sub-contractors);

(8) Predominant Federal Service Code (FSC) reflecting services provided by contractor (and separate predominant FSC for each sub-contractor if different);

(9) Estimated data collection cost;

(10) Organizational title associated with the Unit Identification Code (UIC) for the Army Requiring Activity (the Army Requiring Activity is responsible for providing the contractor with its UIC for the purposes of reporting this information);

(11) Locations where contractor and sub-contractors perform the work (specified by zip code in the United States and nearest city, country, when in an overseas location, using standardized nomenclature provided on website);

(12) Presence of deployment or contingency contract language; and

(13) Number of contractor and sub-contractor employees deployed in theater this reporting period (by country).

As part of its submission, the contractor will also provide the estimated total cost (if any) incurred to comply with this reporting requirement. Reporting period will be the period of performance not to exceed 12 months ending September 30 of each government fiscal year and must be reported by 31 October of each calendar year.

[End of Clause]

C.1 Introduction

The contractor will provide research and development services in the integration and testing of sensors and algorithms being developed to allow Unmanned Ground Vehicles to safely operate among civilian vehicles and pedestrians. This work is being performed in direct support of FCS to address Safe UGV Operations in FCS Unit of Action (UA), designated as FCS LSI Risk UGV0213. This effort will integrate the ARL Robotics-CTA developed algorithms onto a UGV test bed equipped with an FCS Autonomous Navigation System and perform rigorous field testing of the integrated system to meet the goals of FCS LSI Risk UGV0213.

C.2 Scope

C.2.1 General. The contractor, as an independent contractor and not as an agent of the Government, shall conduct the systems engineering, development, integration, demonstration, and experimentation activities of the Army's Unmanned Ground Vehicle (UGV) Safe Operations program. Key activities include technology development and integration of Government Furnished Equipment/Property/Software (GFE/P/S) (listed in attachment 003) into a representative unmanned system and activities associated with experimentation of this system.

C.3 Program Management

C.3.1 General. The contractor shall be responsible for overall program synchronization, which includes, as a minimum, the allocation of contractor provided and Government provided resources to achieve program objectives.

C.3.2 Integrated Product Teams (IPT) and Integrated Product and Process Development (IPPD) will be used to ensure the full integration

of all functional areas in the overall program effort. The IPT objective is to reduce schedule, cost, and performance risk during development and test while ensuring the most cost effective quality product with minimum engineering or other changes.

C.3.2.1 The IPTs shall include multi-disciplined membership to ensure all aspects of design, engineering, test, support and customer requirements are identified and considered. The IPTs shall consist of contractor, subcontractor and Government representatives (including the Government engineering support contractor, the DCS Corporation) however the contractor is ultimately responsible for meeting all requirements in this contract.. The contractor shall enter into a Non Disclosure Agreement with DCS Corporation and a copy of this agreement shall be submitted to the Contracting Officer. IPT members will have access to contractor developed and implemented program plans, as well as all data developed under this effort.

C.3.2.2 IPT meetings shall be conducted via video/teleconference, whenever feasible, or in conjunction with the quarterly IPRs. The IPT will participate in all design reviews to ensure continuous, effective coordination and communication among all of the disciplines involved in the UGV Safe Operations system integration and testing.

C.3.3 Integrated Data Environment (IDE). The contractor shall establish, maintain and manage an online, secure and access controlled data environment in order that the Government can easily share files and exchange program information.

C.3.3.1 The contractor shall maintain availability of all data developed under this contract via the data environment throughout the contract period of performance. The data environment shall include, at a minimum, all data items listed in the Contract Data Requirements List (CDRL) and any presentations from review meetings. The data environment shall include all data related to the team's concepts and analysis process (including CAD representations of all designs), as well as program management information.

C.3.3.2 The contractor shall provide all of the necessary implementation to ensure that the Government team is able to interface with the IDE as required.

C.3.4 Master Schedule. A master schedule shall be drafted that maps out all contractual activities to include: relevant FCS events, IPR's, technology development and integration, testing and experiments, and deliverables. The master schedule shall identify critical paths for achieving the final performance requirements.

C.3.5 Integration Plan (CDRL A004).The contractor shall develop an integration plan outlining system integration efforts throughout the course of the contract. The integration plan shall define: (1) all system components required for system integration,(2) system design details (3) a strategy for integration of the components and for future system enhancements, (4) sources of technology and major system components, (5) a collaborative development strategy/environment to permit concurrent development between the contractor and the technology/ system component suppliers, (6) an integration schedule, to include required dates for availability of technologies and major system components, (7) engineering development field testing schedule,(8) identification of critical path items, (9) Hardware Interface Control Documents (ICDs), (10) Software Application Programmers Interfaces (APIs) and (11) contingency plans if technologies are not available on the required dates. The contractor shall provide a draft plan to the Government for review and comment forty five (45) days prior to the Critical Design Review, present a final plan to the Govt at the CDR, and updates as required during quarterly IPRs.

C.3.6 Cost and Schedule

C.3.6.1 The Contractor shall track and report on costs according to the WBS down to the third level (as a minimum). Reporting shall be required at lower levels when the Government deems particular items to be problem or high-risk areas. The Government has provided a WBS and WBS dictionary (Attachment 002). After award, the WBS may be modified subject to Government approval.

C.3.6.2 The Contractor shall generate a time-phased budget baseline subject to Government review and approval, assigning all contract costs to specific WBS elements in a manner that allows the estimated and actual costs to be evaluated accurately against incremental progress achieved for each WBS element on a monthly basis.

C.3.6.3 The budget baseline shall be reviewed at IPR #1, and any time the contractor proposes to change the allocation of funding amongst WBS elements.

C.3.6.4 The contractor shall prepare and submit a Contractor's Progress, Status and Management Report I/A/W DI-MGT-80227 (CDRL A008). This report indicates the progress of work and the status of the program and of the assigned tasks, report costs, and informs of existing or potential problem areas.

C.3.6.5 The Contractor shall prepare and submit a Cost Performance Report (CPR) I/A/W DI-MGT-81466a (CDRL A009). CPR reporting shall be through the third level of the WBS. Reporting shall be required at lower levels when the Government deems particular items to be problem or high risk areas. The contractor shall provide written notice, explanation, and corrective action plan for any WBS element for which the actual cost exceeds the estimated cost by more than 10%.

C.3.7 Meetings and Reviews

C.3.7.1 IPR #1 - Start of Work Meeting. The contractor shall host a Start of Work meeting within thirty (30) days of contract award. At

the meeting, the contractor shall present their proposed plan for accomplishing the contract requirements and identify proposed IPTs and IPT membership.

C.3.7.2 In-Process Reviews (IPRs). The contractor shall host quarterly IPRs and provide administrative support, i.e. organize, schedule, handle registration, media services, etc., for meetings and Government scheduled reviews. An agenda will be coordinated between the COR and the contractor prior to contractor-hosted reviews. The contractor shall provide a summary of the program progress and status to include: overall system design and development, technical performance, test, cost, schedule, and safety issues. The contractor shall describe those accomplishments and problems that have occurred since the previous review, including the current status of unresolved problems.

C.3.7.3 Minutes and Action Items (CDRL A007). Meeting minutes and action items shall be provided in contractor format within fifteen (15) days after conclusion of the meeting in the IDE.

C.3.7.4 Final Review Meeting. A final review of this contract shall be held at the contractor's facility ninety (90) days after completion of the final field experiment. The review shall summarize close-out efforts and plans for support of the UGV Safe Ops testbed vehicle systems. The contractor shall deliver a draft version of the final report 60 days sixty (60) days after the completion of the final field experiment. The contractor shall deliver the final report at this meeting.

C.4 Systems Engineering
C.4.1 General. The contractor shall perform the necessary systems engineering activities required to properly integrate and test the UGV Safe Operations system on a suitable technology demonstrator that complies with the Safe Ops performance specification (Section J, Attachment 001). These systems engineering activities shall include:

System design
Hardware engineering
Software engineering
Support engineering

C.4.1.1 System Design. The contractor shall perform the system design activities necessary to develop a system architecture comprised of functional hardware and software building blocks that satisfy UGV Safe Operations system requirements. All system level interfaces (hardware, software, and human) shall also be defined. Tradeoff analyses shall be performed that consider system requirements, performance, maturity and cost to ensure an optimal system design. The system design shall be captured in the Integration Plan (CDRL A004) that shall include the following content:

System Wide Design Decisions
System Architectural Design
System Components
Concept of Execution
Interface Design
Requirements Traceability

C.4.1.2 Hardware Engineering. The contractor shall perform the hardware engineering activities required to develop, test and integrate the hardware components identified by the system design. For non-developmental hardware components, the contractor shall perform the required hardware engineering necessary to configure and interface the component to the rest of the system. All hardware interfaces shall be captured in one or more Interface Control Documents (ICDs) (CDRL A004).

C.4.1.3 Software Engineering. The contractor shall perform the software engineering activities required to develop, test and integrate the software components identified by the system design. For non-developmental software components, the contractor shall perform the required software engineering necessary to configure and interface the component to the rest of the system. All developed software components shall include an Application Programmer's Interface (API) (CDRL A004) to facilitate reuse of the software.

C.4.1.4 Support Engineering. The contractor shall perform the necessary engineering functions to support the system, hardware and software developments. These functions shall include the following:

Mechanical Engineering
Drafting
Human Factors
Safety

C.4.1.6 FCS LSI Requirements Crosswalk (CDRL A003). The contractor shall perform requirements analysis in order to ensure that all applicable requirements have been identified and considered in the development of the UGV Safe Operations technology demonstrator. The contractor shall perform an FCS LSI UGV0213 risk requirements versus Safe Operations capabilities crosswalk documenting how closely the Safe Ops system shall meet the objective and threshold LSI risk requirements. Requirements from the Safe Ops Performance Specification (Section J, Attachment 001) shall be analyzed and captured into a UGV Safe Ops/FCS LSI Risk UGV0213 Requirements Crosswalk (CDRL A003).

C.4.2 System Design

C.4.2.1 General. The contractor shall acquire, develop and integrate the technology components required to meet the intermediate and final performance specifications listed in Section J, Attachment 1 - Performance Specification, Paragraph 3.2.

C.4.2.2 Reuse. The contractor shall maximize the use of GFE/P/S and other available technology components and software. The goal of the program is to have GOVERNMENT PURPOSE RIGHTS (IAW DFARS) software, the government will be notified if any software used will restrict Government rights beyond GOVERNMENT PURPOSE RIGHTS. If any proprietary software will be used in this effort, a list with the government rights will be provided for review to be used during proposal evaluation.

C.4.3 Subsystem Development

C.4.3.1 General. The contractor shall modify any GFE/P/S (listing in Section J, Attachment 003) or develop and/or enhance any technology component that is insufficient to meet the intermediate and final performance specifications listed in Section J, Attachment 001, Performance Specification, Paragraph 3.2, in the manner described in the System Specification.

C.4.3.2 Autonomous Mobility Suite. The contractor shall integrate the Fifthe Generation (Gen V) FCS Autonomous Navigation System (ANS) mobility suite into the robotically actuated TAC-C platform to facilitate the transition of technology to other Army programs, such as the Future Combat Systems program.

C.4.3.3 Human Robot Interface. The contractor shall utilize a GF(x) Human Robot Interface System for the UGV Safe Operations platform to facilitate the transition of technology to other Army programs, such as the Future Combat Systems program.

C.5 UGV Safe Operations System Development and Integration
C.5.1 General. The contractor shall integrate the GFE/P/S and develop necessary technology components required to meet the performance specifications listed in Section J, Attachment 001, Performance Specification, Paragraph 3.2 in accordance with the contractors Integration Plan. The contractor shall report the status of the integration effort to the Government at the quarterly IPRs.

C.5.2 UGV Safe Operations testbed vehicles.

C.5.2.1 The contractor shall furnish two (2) Tactical Autonomous Combat Chassis (TAC-C) vehicles or suitable robotic vehicles which allow for the integrated UGV Safe Operations system to meet the applicable performance specifications listed in Section J, Attachment 001, Performance Specification, Paragraph 3.2. The UGV Safe Operations testbed vehicles shall utilize an existing platform to minimize overall program cost, schedule, and integration risks, as it is not the intent to develop a unique platform for this program.

C.5.3 Robotics Technology Advancement Areas

C.5.3.1 The contractor shall develop an integrated system that minimizes the delay between object detection and vehicle response in order to maximize the time and distance that the system has to operate safely around humans and other moving obstacles.

C.5.3.2 UGV Safe Operations Control System Optimization The contractor shall optimize the Safe Ops system from a control system perspective. This includes:

1) Update the hardware and software in the robotically actuated platform to reduce the latency, and increase the sample rate to improve dynamic response and stability.
2) Physically measure latency of the Safe Ops control system components and subsystems, in order to measure the actual characteristics of the system.
3) Analyze and identify solutions to reduce total system latency.

C.6 System Testing and Experimentation
C.6.1 General. The contractor shall plan, conduct and coordinate UGV Safe Operation system Engineering Evaluation Tests (EETs) in April 2008 and in October 2008 for a total of two experiments. Two (2) UGV Safe Operations testbeds shall be utilized at each Engineering Evaluation Test. Each experiment shall be planned and conducted by the contractor with the content to be approved by the Government. The Engineering Evaluation Test will demonstrate and validate the capabilities of the systems to meet the applicable specifications provided in Section J, Attachment 001, Performance Specification, Paragraph 3.2. The contractor shall prepare a report summarizing each experiment (CDRL A006).

C.6.2 UGV Safe Operations Engineering Evaluation Tests

C.6.2.1 Baseline Engineering Evaluation Test (Experiment 1). The contractor shall conduct Engineering Evaluation Tests, in accordance with the Test, Evaluation, and Support Plan outlined in Paragraph C.6.3.1, to demonstrate to the Government the attainment of required performance levels specified in Section J, Attachment 001, Performance Specification, Paragraph 3.2. Required Government representatives will observe all testing; the operation of the vehicles can be done using contractor and government personnel, and shall not require the use of soldiers. Technical support during the experiment shall also be required, to include vehicle operation, repairs, etc. The contractor shall document the entire experiment, including video taping and photographing, and incorporate their observations

and recommendations into the UGV Safe Operations Baseline Detailed Experiment Report. For planning purposes the location is assumed to be Ft. Indiantown Gap, PA.

C.6.2.2 Final Engineering Evaluation Test (Experiment 2). The contractor shall conduct Engineering Evaluation Tests, in accordance with the Test, Evaluation, and Support Plan outlined in Paragraph C.6.3.1, to demonstrate to the Government the attainment of required performance levels specified in Section J, Attachment 001, Performance Specification, Paragraph 3.2. Required Government representatives shall observe all testing; the operation of the vehicles can be done using contractor and government personnel, and shall not require the use of soldiers. Technical support during the experiment shall also be required, to include vehicle operation, repairs, etc. The contractor shall document the entire experiment, including video taping and photographing, and incorporate their observations and recommendations into the UGV Safe Operations Final Detailed Experiment Report. For planning purposes the location is assumed to be Ft. Indiantown Gap, PA

C.6.2.3 Engineering Development Testing. The contractor shall conduct Engineering Development testing on an as needed basis during system integration. These Engineering Development tests shall be outlined in the Integration Plan (CDRL A004).

C.6.3 Experiment Support Planning

C.6.3.1 Test, Evaluation, and Support (TES) Plans (CDRL A005). The contractor shall develop and execute a TES plan for each experiment, to accurately assess and quantify the performance and mission capabilities of the systems. The test plan shall be designed to ascertain the functionality of individual components of the systems, as well as the overall performance of those components as they are integrated into a working system. The support information shall describe (1) the proposed logistic and administrative support for the vehicles, observers and experiment personnel, (2) installation and site support managers, and (3) provision of spare parts for critical items. Critical spare parts are defined as those parts required to keep testing on schedule and minimize downtime. The contractor shall provide a draft plan to the Government for review and comment sixty (60) days prior to start of the each experiment and submit a final plan fifteen (15) days following receipt of comments from the Government. (CDRL A005)

C.6.4 Other Support.

C.6.4.1 The contractor shall be responsible for all support functions, including reservation and coordination of test areas, allocation of radio frequencies, logistics support (shipment of hardware and vehicles, etc.) and accommodation of observers at the test site.

C.6.4.2 The contractor shall ensure that sufficient and required personnel are on-site and that adequate material resources are available to ensure conduct of the field exercise without unwarranted delays.

C.6.4.3 The contractor shall participate in coordination meetings with the host installation/unit command (for planning purposes assume three (3) one day meetings at the host installation).

C.6.4.4 The contractor shall anticipate a one week on-site preparation period prior to conduction of the Engineering Evaluation Tests listed sections C.6.2.

C.6.4.5 The contractor shall perform data collection and reduction required to verify that they have met the performance specified in Section J, Attachment 001, Performance Specification, Paragraph 3.2 as well as to analyze user feedback.

C.6.5 Detailed Experiment Report (CDRL A006). Within thirty (30) days after completion of each Engineering Evaluation Test, the contractor shall submit for COR approval a draft detailed experiment report. The draft report shall contain full results and information from the engineering evaluation tests, together with a narrative summary, a full discussion of system performance relative to the stated performance levels set forth in Section J, Attachment 001, Performance Specification, Paragraph 3.2, observations and preliminary analysis of any system failures, a set of recommendations concerning necessary modifications to the system, and performance reguirements for subsequent demonstrations based on observations, recommendations and progress to date. The report shall also include any Test Incident Reports from any previous Engineering Development testing. The COR will respond within fifteen (15) days of receipt of the draft report. The contractor's final Detailed Experiment Report shall be due thirty (30) days after receipt of COR comments on the draft submission.

C.7 Safety Program.
C.7.1 System Safety. The contractor shall establish a systems safety engineering program that shall implement safe operational measures that reflect the intended operational procedures of FCS ANS equipped vehicles. The activity shall include:

Identification of all system and subsystem hazards and/or hazardous conditions including hazard conditions resulting from the integration of subsystems and component technologies.

Determination of hazard effects within the context of system design, test, and operation.

Categorization of each hazard based upon hazard severity and likelihood of occurrence.

Identification of all hardware, software, human error, and software-influenced human error, causal factors for each hazard.

Identification of safety-specific requirements to either eliminate, mitigate, or control all hazard causal factors.

Provision of evidence of safety requirements implementation via design inspection, analysis, or test.

Analysis of determination of residual safety risk of each hazard after all hazard elimination, mitigation, or control activities are accomplished.

C.7.2 Safety Identification. For all safety issues determined in C.7.1, the contractor shall identify all safety-related problem areas, including physical and functional interfaces, with recommended solution alternatives. The contractor will generate corrective measures in the form of cautions, warnings, or requirements including system, test, design, safety, operation, or maintenance requirements.

C.7.3 Safety Assessment Report (SAR). (CDRL A011). The contractor shall provide the results of any safety-specific trade studies or safety-related hardware and software testing accomplished during the course of the contract. The safety assessment and its subsequent report shall be conducted using Task 301 of MIL-STD 882C as a guide. The SAR will provide the results of all safety analyses and activities, and will provide a residual safety risk assessment for each safety-critical function of the system. The contractor shall also identify UGV Safe Operations system test limitations or boundaries, go/no-go safety criteria, and specific safety recommendations to be observed by Government test agencies and system users. The SAR will be prepared IAW DI-SAFT-80102B.

C.7.3.1 Reporting. For all of the experiments listed in section C.6.2, a draft SAR shall be submitted sixty (60) days prior to the experiments. The final SAR shall be submitted thirty (30) days prior to the experiments.

C.7.3.2 Modifications. In the event the system is modified or procedural changes made after the final SAR is submitted, the contractor shall update the SAR to reflect those modifications or changes.

C.8 Quality Program
C.8.1 The contractor shall implement and enforce an ISO 9001 quality system or equivalent throughout the duration of the effort. The system shall provide for controls of process and product characteristics and include criteria and methodology that are used to validate conformance to performance specifications and to achieve continuous process/product improvement. The quality system shall integrate with other functional areas in the design, test, fabrication, and management processes. The contractor's quality system plan, procedures, planning and all other documentation and data that comprise the quality system (for both hardware and software), shall be made available for government review throughout life of the contract.

C.8.2 The Contractor shall develop software using applicable SEI CMM Level III (or equivalent) processes identified in the Contractors Software Development Process.

C.8.3 Software Quality.

C.8.3.1 The contractor shall use software measures to affect the necessary discipline in software development process and assess the maturity of the software products. The software measures shall at least address and track the following management issues:
1. Schedule and progress regarding work completion,
2. Funding and personnel resources regarding the work to be performed,
3. Software development performance regarding the capabilities to meet program needs

C.8.3.2 The contractor shall report progress, status, and plans on the UGV Safe Operations software development at program IPRs.

C.8.3.3 The Contractor shall develop software or package existing software utilizing Application Programming Interfaces (API) in order to facilitate reuse.

C.8.3.5 The Contractor shall establish a software configuration management system, utilize a deficiency reporting process, and version control software including baseline and successive releases.

C.9 Deliverables
C.9.1 Deliverable Software (CDRL A010)- Deliverable Software shall include all software comprising the Safe Ops system. The contractor shall provide source code for all software developed under the Safe Ops contract. Software developed under the Safe Ops contract, for which source code is to be delivered, includes any changes and or additions to the GFE/P/S provided software. Where components of the Safe Ops system are comprised of software previously developed exclusively at private expense, whether commercial or non-commercial, compiled (executable) code is acceptable. [Note the obligations under DFARS 252.227-7014(e) to provide the requisite Pre-Award Assertion of Restrictions.] In the case of such software components developed other than under the Safe Ops contract, contractor shall also deliver any transferable licenses required for use of such component software. Interim software will be delivered 15 days after each experiment. The Contractor shall deliver the final system software version with final report described in section C.9.2.1 (CDRL A001). Software development documentation will be delivered with the final system software.

C.9.2 Documentation. The contractor shall prepare all deliverables in contractor format unless otherwise specified. The deliverables shall be furnished to the required Government offices in accordance with the quantity and schedule set forth in the Contract Data

Requirements List (CDRL) (DD Form 1423). To facilitate transition to a paperless reporting system, the contractor shall submit reports in electronic format proposed by the contractor and approved by the Govt. The contractor shall prepare reports using best commercial practices that will produce documents that are clearly written, describe accomplishments accurately, detail technical issues, and define risks and problems and provide unambiguous, detailed solutions.

C.9.2.1 Final Report (CDRL A001). The contractor shall deliver a draft final report sixty(60) days after completion of the final experiment , which shall include a summary of contract activity, highlighting the results of each experiment. The draft final report shall include a summary of technologies considered along with trade off studies completed, summary of test performance results, and contract cost summaries. The contractor shall detail all conclusions drawn from their efforts and state recommendations for improvements and future development. The Government will respond within fifteen (15) days of receipt of the draft report. The final report shall be delivered within thirty (30) days of receiving Government comments.

C.9.2.2 System Documentation(CDRL A002). The contractor shall deliver contractor developed documentation, including schematics, engineering drawings, complete parts listing, software development documentation, user manuals, and system operator and maintenance manuals (including trouble shooting guides). For Commercial Off The Shelf (COTS) hardware and software the contractor shall deliver operator manuals, maintenance manuals (including trouble shooting guides) for the technical operator, parts listings, and schematics. All other documentation identified above shall be delivered concurrently with delivery of the systems to the Government.

C.9.2.3 Safe Ops requirements Crosswalk (CDRL A003)- The contractor shall deliver the initial FCS LSI UGV0213 Risk Requirements Crosswalk listed in section C.4.1.6 at IPR #2, updates will be required as the FCS LSI updates Risk UGV0213.

C.9.2.4 Integration Plan (CDRL A004) - The contractor shall deliver the Integration Plan as listed in section C.3.5.

C.9.2.5 Test, Evaluation, and Support (TES) Plan (CDRL A005) - The contractor shall deliver the TES Plan as listed in section C.6.3.1. The contractor shall develop an experiment support plan for each of the Engineering Evaluation Tests planned for the Safe Ops Program listed in section C.6.2.

C.9.2.6 Detailed Experiment Report (CDRL A006) - The contractor shall deliver the Detailed Experiment Report as listed in section C.6.5

C.9.2.7 Minutes and Action Items (CDRL A007) - The contractor shall deliver the Minutes and Action Items listed in section C.3.7.3 within fifteen (15) days after conclusion of the meeting in the IDE. The documents shall be delivered to the IDE.

C.9.2.8 Contractor's Progress, Status and Management Report (CDRL A008) - Contractor shall deliver the Report listed in section C.3.6.4 I/A/W DI-MGMT-80227 on a monthly basis..

C.9.2.9 Contract Performance Report (CPR) (CDRL A009)- Contractor shall deliver the Report listed in section C.3.6.5 I/A/W DI-MGMT-81466A on a monthly basis.

C.9.2.10 Software. The Contractor shall provide the Safe Ops System Software (CDRL A010) as described in C.9.1.

C.9.2.11 Safety Assessment Report (CDRL A011). Contractor shall deliver the report listed in Section C.7.3 in accordance with DI-SAFT-80102B, sixty (60) days prior to each EET.

C.9.3 UGV Safe Operations Vehicle System. The contractor shall deliver to Government facilities two (2) Safe Ops testbed vehicles in good working order no later than 30 days after the final experiment.

C.9.4 The contractor shall provide twelve (12) months of support for the vehicle systems following their delivery to the Government. The contractor shall assume twelve one-week trips for two people to TARDEC to perform support activities including, training, maintenance, and repair to hardware and software.

C.10 Optional SOW

C.10.1 Install UGV Safe Operations system on GFE Stryker ICV. Integrate and test the objective UGV Safe Operations system on the Robotic Follower (RF) Stryker Infantry Carrier Vehicle (ICV). For cost estimation purposes assume that an FCS Autonomous Navigation System (ANS) system must be purchased and assume that testing will consist of the duties in C.6.2.2 and the test site will be at Ft. Indiantown Gap, PA for a period of four weeks. Period of performance for this option shall be eitghteen months from the date of option exercise.

*** END OF NARRATIVE C0001 ***

SECTION D - PACKAGING AND MARKING

	Regulatory Cite	Title	Date
D-1	252.211-7003	ITEM IDENTIFICATION AND VALUATION (Alternate I version dated April 2005)	JUN/2005

NOTE: Paragraph (a) comes after paragraphs (b) through (d) below. It was placed there because it's content is inconsequentical as none of the definitions contained therein are used in this Alternate I version of this DFARS clause.

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(b) The Contractor shall deliver all items under a contract line, subline, or exhibit line item.

(c) For each item delivered under a contract line, subline, or exhibit line item under paragraph (b) of this clause, in addition to the information provided as part of the Material Inspection and Receiving Report specified elsewhere in this contract, the Contractor shall report the Governments unit acquisition cost.

(d) The Contractor shall submit the information required by paragraph (c) of this clause in accordance with the data submission procedures at <http://www.acq.osd.mil/dpap/UID/DataSubmission.htm>.

(a) Definitions. As used in this clause--

"Automatic identification device" means a device, such as a reader or interrogator, used to retrieve data encoded on machine-readable media.

Concatenated unique item identifier means

(1) For items that are serialized within the enterprise identifier, the linking together of the unique identifier data elements in order of the issuing agency code, enterprise identifier, and unique serial number within the enterprise identifier; or

(2) For items that are serialized within the original part, lot, or batch number, the linking together of the unique identifier data elements in order of the issuing agency code; enterprise identifier; original part, lot, or batch number; and serial number within the original part, lot, or batch number.

Data qualifier means a specified character (or string of characters) that immediately precedes a data field that defines the general category or intended use of the data that follows.

DoD recognized unique identification equivalent means a unique identification method that is in commercial use and has been recognized by DoD. All DoD recognized unique identification equivalents are listed at <http://www.acq.osd.mil/dpap/UID/equivalents.html>.

DoD unique item identification means a system of marking items delivered to DoD with unique item identifiers that have machine-readable data elements to distinguish an item from all other like and unlike items. For items that are serialized within the enterprise identifier, the unique item identifier shall include the data elements of the enterprise identifier and a unique serial number. For items that are serialized within the part, lot, or batch number within the enterprise identifier, the unique item identifier shall include the data elements of the enterprise identifier; the original part, lot, or batch number; and the serial number.

Enterprise means the entity (e.g., a manufacturer or vendor) responsible for assigning unique item identifiers to items.

Enterprise identifier means a code that is uniquely assigned to an enterprise by an issuing agency.
Governments unit acquisition cost means

(1) For fixed-price type line, subline, or exhibit line items, the unit price identified in the contract at the time of delivery;

(2) For cost-type or undefinitized line, subline, or exhibit line items, the Contractors estimated fully burdened unit cost to the Government at the time of delivery; and

(3) For items produced under a time-and-materials contract, the Contractors estimated fully burdened unit cost to the Government at the time of delivery.

Issuing agency means an organization responsible for assigning a non-repeatable identifier to an enterprise (i.e., Dun & Bradstreets Data Universal Numbering System (DUNS) Number, Uniform Code Council (UCC) /EAN International (EAN) Company Prefix, or Defense Logistics Information System (DLIS) Commercial and Government Entity (CAGE) Code.

Issuing agency code means a code that designates the registration (or controlling) authority for the enterprise identifier.

Item means a single hardware article or a single unit formed by a grouping of subassemblies, components, or constituent parts.

Lot or batch number means an identifying number assigned by the enterprise to a designated group of items, usually referred to as either a lot or a batch, all of which were manufactured under identical conditions.

Machine-readable means an automatic identification technology media, such as bar codes, contact memory buttons, radio frequency identification, or optical memory cards.

Original part number means a combination of numbers or letters assigned by the enterprise at item creation to a class of items with the same form, fit, function, and interface.

Parent item means the item assembly, intermediate component, or subassembly that has an embedded item with a unique item identifier or DoD recognized unique identification equivalent.

Serial number within the enterprise identifier means a combination of numbers, letters, or symbols assigned by the enterprise to an item that provides for the differentiation of that item from any other like and unlike item and is never used again within the enterprise.

Serial number within the part, lot, or batch number means a combination of numbers or letters assigned by the enterprise to an item that provides for the differentiation of that item from any other like item within a part, lot, or batch number assignment.

Serialization within the enterprise identifier means each item produced is assigned a serial number that is unique among all the tangible items produced by the enterprise and is never used again. The enterprise is responsible for ensuring unique serialization within the enterprise identifier.

Serialization within the part, lot, or batch number means each item of a particular part, lot, or batch number is assigned a unique serial number within that part, lot, or batch number assignment. The enterprise is responsible for ensuring unique serialization within the part, lot, or batch number within the enterprise identifier.

Unique item identifier means a set of data elements marked on items that is globally unique and unambiguous.

Unique item identifier type means a designator to indicate which method of uniquely identifying a part has been used. The current list of accepted unique item identifier types is maintained at http://www.acq.osd.mil/dpap/UID/uid_types.html

[End of Clause]

D.1 Packaging and Packing:

All items deliverable under this Contract shall be packaged and packed in accordance with standard commercial practice in order to assure arrival at destination without damage or loss.

D.2 Software Marking:

The Contractor shall ensure that all technical data deliverable under this contract is identified by the contractor's name and address and, where applicable, the name and address of the subcontractor who generated the data.

*** END OF NARRATIVE D0001 ***

SECTION E - INSPECTION AND ACCEPTANCE

	Regulatory Cite	Title	Date
E-1	52.246-8	INSPECTION OF RESEARCH AND DEVELOPMENT -- COST-REIMBURSEMENT	MAY/2001

E.1 Inspection and Acceptance

The Contracting Officer's Representative (COR) is responsible for the inspecting and accepting or rejecting all hardware, software and reports submitted by the Contractor to the Government, at destination, in accordance with the terms of the Contract.

*** END OF NARRATIVE E0001 ***

SECTION F - DELIVERIES OR PERFORMANCE

	Regulatory Cite	Title	Date
F-1	52.242-15	STOP WORK ORDER--(ALTERNATE I dated APR 1984)	AUG/1989
F-2	52.247-34	F.O.B. DESTINATION	NOV/1991
F-3	52.247-55	F.O.B. POINT FOR DELIVERY OF GOVERNMENT-FURNISHED PROPERTY	JUN/2003

F.1 Period of Performance

F.1.1 The period of performance of the contract shall be thirty one (31) months from the date of award, including submission of the final technical report.

F.1.2 All data shall be delivered in accordance with DD Form 1423.

F.2 The hardware shall be delivered to the following address:

US Army TARDEC
AMSRD-TAR-R
6501 E. 11 Mile Road
Warren, MI 48397

*** END OF NARRATIVE F0001 ***

SECTION G - CONTRACT ADMINISTRATION DATA

LINE ITEM	PRON/ AMS CD/ MIPR	ACRN	OBLG STAT	ACCOUNTING CLASSIFICATION	JOB ORDER NUMBER	ACCOUNTING STATION		OBLIGATED AMOUNT
0001AA	R372C230R3 63300549700	AA	2	21 72040000076N6N7EP633005255Y S20113	72C230	W56HZV	$	1,500,000.00
						TOTAL	$	1,500,000.00

SERVICE NAME	TOTAL BY ACRN	ACCOUNTING CLASSIFICATION	ACCOUNTING STATION		OBLIGATED AMOUNT
Army	AA	21 72040000076N6N7EP633005255Y S20113	W56HZV	$	1,500,000.00
			TOTAL	$	1,500,000.00

ACRN	EDI ACCOUNTING CLASSIFICATION
AA	21 070820400000 S20113 76N6N7E63300549700255Y 72C230S20113 W56HZV

	Regulatory Cite	Title	Date
G-1	252.232-7003	ELECTRONIC SUBMISSION OF PAYMENT REQUESTS	JAN/2004
G-2	52.242-4016	COMMUNICATIONS	MAY/2000

Communications on technical matters pertaining to the contract shall be direct between the contractor and the Technical Representative. Communications for the Technical Representative shall be addressed to:

Name: Brad Brumm
E-mail: brad.brumm@us.army.mil

The Administrative Contracting Officer's (ACO) name and email address are also provided if known at this time:

ACO: Linda.Hirsch
E-mail: linda.hirsch@dcma.mil

Please see the appointment letters prepared at time of contract award for functions the Technical Representative and ACO will perform on this contract.

[End of Clause]

G-3 252.201-7000 CONTRACTING OFFICER'S REPRESENTATIVE DEC/1991

(a) Definition. Contracting Officer's Representative means an individual designated in accordance with subsection 201.602-2 of the Defense Federal Acquisition Regulation Supplement and authorized in writing by the contracting officer to perform specific technical or administrative functions.

(b) If the Contracting Officer designates a contracting officer's representative (COR), the Contractor will receive a copy of the written designation. It will specify the extent of the COR's authority to act on behalf of the contracting officer. The COR is not authorized to make any commitments or changes that will affect price, quality, quantity, delivery, or any other term or condition of the contract.

[End of Clause]

G-4 252.204-7006 BILLING INSTRUCTIONS OCT/2005

When submitting a request for payment, the Contractor shall--

(a) Identify the contract line item(s) on the payment request that reasonably reflect contract work performance; and

(b) Separately identify a payment amount for each contract line item included in the payment request.

[End of Clause]

G-5 52.204-4011 PAYMENT INSTRUCTIONS FOR THE DEFENSE FINANCE AND ACCOUNTING SERVICE OCT/2005

(TACOM) (DFAS)

In accordance with DFARS PGI 204.7108, the contract shall be paid in accordance with DFARS PGI 204.7108(d)(5), line item specific by cancellation date.

[End of Clause]

G-6 52.227-4004 RELEASE OF INFORMATION OCT/2003
(TACOM)

The contractor shall ensure that he complies with the requirements of Chapter 5, page 22, paragraph 5-48, of AR 360-1, The Army Public Affairs Program, dated 15 Sep 2000, prior to contemplated release of any procurement information. Approval of the Contracting Officer is required prior to release of any such information. AR 360-1 may be found at http://www.usapa.army.mil/pdffiles/r360_1.pdf .

[End of clause]

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G-7 52.232-4005 INVOICE INFORMATION REQUIREMENT JAN/1988
(TACOM)

On each payment request submitted, the Contractor shall identify each affected Contract Line Item Number (CLIN), sub-CLIN, and/or work directive, together with the related dollar amounts. This requirement does not diminish or restrict any other requirement of this contract.

***

G.1 CONTRACTOR: SPECIAL BILLING INSTRUCTIONS:

G.1.1 The Contractor shall bill to the six-digit Sub-Line Item Number (SLIN) level and ACRN under the four-digit Contract Line Item Number (CLIN), see Section B, for which the work effort was performed.

G.1.2 If multiple SLINs exist on the same four-digit major CLIN, the Contractor shall determine which six-digit SLIN contains the oldest fiscal year money and invoice against the SLIN containing the oldest money, until fully billed.

G.1.3. To determine the fiscal year of funds, refer to the "Job Order Number" (JON) column that applies to ALL funding under the four digit CLIN, as shown in Section G - Contract Administration Data. The first digit of the JON represents the fiscal year. (For example, CLIN 0001 is funded by SLINs 000101 and 000102. If JON: 22C334 is associated with 000101 and JON: 32C205, associated with 000102, SLIN 000101 is FY 2002 funding and shall be invoiced prior to invoicing against SLIN 000102, which is FY 2003 funding.)

G.2 DFAS: SPECIAL PAYMENT INSTRUCTIONS:

DFAS will make payments as billed by the contractor.

*** END OF NARRATIVE G0001 ***

SECTION H - SPECIAL CONTRACT REQUIREMENTS

	Regulatory Cite	Title	Date
H-1	252.203-7002	DISPLAY OF DOD HOTLINE POSTER	DEC/1991
H-2	252.204-7000	DISCLOSURE OF INFORMATION	DEC/1991
H-3	252.204-7002	PAYMENT FOR SUBLINE ITEMS NOT SEPARATELY PRICED	DEC/1991
H-4	252.205-7000	PROVISION OF INFORMATION TO COOPERATIVE AGREEMENT HOLDERS	DEC/1991
H-5	252.223-7006	PROHIBITION ON STORAGE AND DISPOSAL OF TOXIC AND HAZARDOUS MATERIALS	APR/1993
H-6	252.225-7001	BUY AMERICAN ACT AND BALANCE OF PAYMENTS PROGRAM	JUN/2005
H-7	252.225-7002	QUALIFYING COUNTRY SOURCES AS SUBCONTRACTORS	APR/2003
H-8	252.225-7006	QUARTERLY REPORTING OF ACTUAL CONTRACT PERFORMANCE OUTSIDE THE UNITED STATES	APR/2005
H-9	252.225-7013	DUTY-FREE ENTRY	JUN/2005
H-10	252.226-7001	UTILIZATION OF INDIAN ORGANIZATIONS, INDIAN-OWNED ECONOMIC ENTERPRISES, AND NATIVE HAWAIIAN SMALL BUSINESS CONCERNS	SEP/2004
H-11	252.227-7037	VALIDATION OF RESTRICTIVE MARKINGS ON TECHNICAL DATA	SEP/1999
H-12	252.231-7000	SUPPLEMENTAL COST PRINCIPLES	DEC/1991
H-13	252.235-7011	FINAL SCIENTIFIC OR TECHNICAL REPORT	NOV/2004
H-14	252.246-7000	MATERIAL INSPECTION AND RECEIVING REPORT	MAR/2003
H-15	252.246-7001	WARRANTY OF DATA	DEC/1991
H-16	52.204-4005	REQUIRED USE OF ELECTRONIC CONTRACTING	SEP/2004

(a) All contract awards, modifications and delivery orders issued by TACOM will be issued electronically. The contractor has the option to receive these actions either via the Worldwide Web (WWW) or Electronic Data Interchange (EDI). Many provisions/clauses that appear "by reference", meaning only clause titles and regulation site are listed; their full texts can be found at the website http://farsite.hill.af.mil/

(b) In order to be eligible to receive an award under this solicitation, the successful offeror must be registered with the Department of Defense (DOD) Central Contractor Registration (CCR). The CCR registration process may be done electronically at the World Wide Web (WWW) site: http://www.ccr.gov/ . (In order to be registered to use EDI, you must use the long form for registration. Certification information, including information on the EDI 838 TPP, must be furnished to the Contracting Officer within 60 calendar days after contract award to complete networking requirements within the Government.)

(c) Worldwide Web Distribution. The contractor will receive an electronic Notice of the Award, Modification, or Delivery Order via e-mail. If you choose the WWW option, you must download the file from the appropriate TACOM webpage:

Warren: http://contracting.tacom.army.mil/awd.htm
Rock Island: https://aais.ria.army.mil/AAIS/AWDINFO/index.htm
Picatinny: http://procnet.pica.army.mil/dbi/DynCBD/award.cfm
Red River Army Depot: http://www.redriver.army.mil/contractingframes/RecentAwards.DPD.cfm
Anniston Army Depot: http://www.anadprocnet.army.mil/

(d) Electronic Data Interchange. If you choose to receive contract awards, modifications and delivery orders through EDI, they will be delivered electronically via the Federal Acquisition Network (FACNET). Federal Standard Version 3050 of Standard X12 from the American National Standards Institute (ANSI) will be used as the format for these electronic transactions.

(1) You must complete the EDI 838 Trading Partner Profile, and must agree (i) to subcontract with a DoD certified VAN or Value Added Service (VAS) provider, or (ii) to become DoD certified as a Value Added Network (VAN). The EDI 838 Training Partner Profile is contained in the basic CCR registration form and includes portions of the registration form which are titled "Optional".

(2) You must select a VAN from the official DoD approved list. DoD Certified VANs are listed at http://www.acq.osd.mil/dpap/ebiz/VANs.htm . If your VAN is later removed from the official list, or if you voluntarily drop your initially selected VAN, then you must switch to a VAN that remains on the official DoD approved list. You must maintain an active account on a DoD approved VAN for the entire duration of the contract, beginning no later than the 60th day after award.

(e) Unless otherwise specified elsewhere in the contract, all data items you are required to provide under this contract must be submitted electronically. Please go to the following webpage for detailed information about submitting your offer electronically: http://contracting.tacom.army.mil/ebidnotice.htm

(f) Additional information can be obtained by sending a message to: acqcenweb@tacom.army.mil or by calling (586) 574-7059.

[End of Clause]

H-17 52.216-4008 (TACOM) STATUS OF FUNDS ON COST REIMBURSEMENT CONTRACTS/CLINS JUN/1989

(a) The Contractor shall review the funding as it relates to work performed on the cost-reimbursement Contract Line Item Numbers (CLINs) under this contract and shall provide to the Procuring Contracting Officer (PCO) a written determination of what, if any, funds are excess to requirements (leaving a reasonable amount for final overhead rate negotiations and other reasonably predicted requirements) and are available for deobligation. This review shall be coordinated with the Administrative Contracting Officer (ACO), and the written determination shall be accomplished within 120 days of completion of performance under the CLIN. The report shall be prepared in terms of dollars available per Purchase Request Order Number (PRON), unless requested otherwise by the PCO.

(b) This report may be requested in writing by the PCO on additional occasions during the course of performance of work on cost-reimbursable CLINs contained in this contract. On such occasions, the written report shall be provided to the PCO within 14 days of Contractor receipt of the written request.

(End of clause)

H-18 52.246-4026 (TACOM) LOCAL ADDRESSES FOR DD FORM 250 AND WAWF RECEIVING REPORTS SEP/2006

(a) The Contractor may use either the Material Inspection and Receiving Report (DD 250) or Wide Area Workflow (WAWF) to process receiving reports for inspection, acceptance, and payment. Use only one method per contract; not both.

(b) If you are using the Material Inspection and Receiving Report (DD 250), use one of the following methods to send each DD 250 pertaining to this contract to us:

(1) Our first preference is for you to use electronic mail (e-mail), using the following e-mail address: DD250@tacom.army.mil

(2) Our second preference is for you to use data facsimile (datafax) transmission, using this fax number:

(586) 574-7788 and use "DD250 mailbox" in the "to:" block of your fax cover or header sheet.

In either method, do not mix DD250s from more than one contract in a single transmission. That is, you may submit multiple DD250s in a single transmission, but they must all be against the same contract. These copies meet the requirements for the Purchasing Office copy and the Army Inventory Control Manager copy listed in tables 1 and 2 of DFARS Appendix F. The DD250 form may be found, in three different formats, on the World Wide Web at http://www.dtic.mil/whs/directives/infomgt/forms/forminfo/forminfopage2126.html

(c) If you are using Wide Area Workflow (WAWF) instead of DD 250s, we may require copies of the WAWF Receiving Report, Bills of Lading, or other documentation to resolve delinquencies, payment issues, or other administrative issues. If this documentation is requested, use the same email address or fax number shown in paragraph (b) above to submit the information. No copies of the WAWF Receiving Report are required unless specifically requested by the PCO, buyer, or other appropriate government official.

[End of Clause]

H.1 Option (Paragraph C.10)

H.1.1 The Government shall have the unilateral right to exercise the option effort set forth in C.10.1. The Government may exercise this option at any time but no later than twenty four (24) months after contract award. If exercised, the option will be awarded on a cost plus fixed fee basis for a total of $2,311,858.70, which consists of estimated cost of $2,140,609.91 and fixed fee of $171,248.79. The period of performance for this option, if exercised, will be eighteen months.

H.2 SUBCONTRACTING PLAN

The Small Business Subcontracting Plan submitted in response to Request for Proposal W56HZV-07-R-0200, dated 4 May 07, is hereby incorporated by reference.

H.3 IDENTIFICATION OF PROPRIETARY DATA:

The contractor has identified the following items as having been developed at private expense or with mixed funding and as being tendered with limited, restricted or Government Purpose License Rights. Inclusion of this list is intended to facilitate review and acceptance of technical data and does not change, waive or otherwise modify the rights or obligations of the parties under the clause at DFARS 252.227-7013 and 252.227-7014.

Firewire Driver Software	Private Development	Restricted/Limited Rights	GDRS
World Model Software	Private Development	Restricted/Limited Rights	GDRS
Path Planning Software	Private Development	Restricted/Limited Rights	GDRS
TAC C Platform (Vehicle)	Private Development	Restricted/Limited Rights	GDRS
TAC-C Drive by Wire	Private Development	Restricted/Limited Rights	GDRS
TAC-C Tele-Operations	Private Development	Restricted/Limited Rights	GDRS
Safe Operations Algorithms	Note 1 *	Government Purpose	

Developed under Program (s) Notes:
Note 1 = RCTA

*The RCTA Safe Operations Algorithms and Software being developed on the RCTA program are going to be used and come with Government Purpose rights. Note, if it becomes necessary, delivery of these items would come from the ARL RCTA program.

*** END OF NARRATIVE H0001 ***

SECTION I - CONTRACT CLAUSES

This contract incorporates one or more clauses by reference, with the same force and effect as if they were given in full text. Upon request, the Contracting Officer will make their full text available. Also, the full text of a clause may be accessed electronically at this address: http://farsite.hill.af.mil/

[End of Clause]

	Regulatory Cite	Title	Date
I-1	52.202-1	DEFINITIONS	JUL/2004
I-2	52.203-3	GRATUITIES	APR/1984
I-3	52.203-5	COVENANT AGAINST CONTINGENT FEES	APR/1984
I-4	52.203-6	RESTRICTIONS ON SUBCONTRACTOR SALES TO THE GOVERNMENT	SEP/2006
I-5	52.203-7	ANTI-KICKBACK PROCEDURES	JUL/1995
I-6	52.203-8	CANCELLATION, RESCISSION AND RECOVERY OF FUNDS FOR ILLEGAL OR IMPROPER ACTIVITY	JAN/1997
I-7	52.203-10	PRICE OR FEE ADJUSTMENT FOR ILLEGAL OR IMPROPER ACTIVITY	JAN/1997
I-8	52.203-12	LIMITATION ON PAYMENTS TO INFLUENCE CERTAIN FEDERAL TRANSACTIONS	SEP/2005
I-9	52.204-4	PRINTING/COPYING DOUBLE-SIDED ON RECYCLED PAPER	AUG/2000
I-10	52.209-6	PROTECTING THE GOVERNMENT'S INTEREST WHEN SUBCONTRACTING WITH CONTRACTORS DEBARRED, SUSPENDED, OR PROPOSED FOR DEBARMENT	SEP/2006
I-11	52.211-5	MATERIAL REQUIREMENTS	AUG/2000
I-12	52.211-15	DEFENSE PRIORITY AND ALLOCATION REQUIREMENTS	SEP/1990
I-13	52.215-2	AUDIT AND RECORDS - NEGOTIATIONS	JUN/1999
I-14	52.215-8	ORDER OF PRECEDENCE--UNIFORM CONTRACT FORMAT	OCT/1997
I-15	52.215-10	PRICE REDUCTION FOR DEFECTIVE COST OR PRICING DATA	OCT/1997
I-16	52.215-12	SUBCONTRACTOR COST OR PRICING DATA	OCT/1997
I-17	52.215-14	INTEGRITY OF UNIT PRICES (ALTERNATE I, (OCT 1997))	OCT/1997
I-18	52.215-15	PENSION ADJUSTMENTS AND ASSET REVERSIONS	OCT/2004
I-19	52.215-17	WAIVER OF FACILITIES CAPITAL COST OF MONEY	OCT/1997
I-20	52.215-18	REVERSION OR ADJUSTMENT OF PLANS FOR POSTRETIREMENT BENEFITS (PRB) OTHER THAN PENSIONS	JUL/2005
I-21	52.215-19	NOTIFICATION OF OWNERSHIP CHANGES	OCT/1997
I-22	52.216-7	ALLOWABLE COST AND PAYMENT	DEC/2002
I-23	52.216-8	FIXED FEE	MAR/1997
I-24	52.219-8	UTILIZATION OF SMALL BUSINESS CONCERNS	MAY/2004
I-25	52.219-9	SMALL BUSINESS SUBCONTRACTING PLAN	SEP/2006
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I-32	52.222-35	EQUAL OPPORTUNITY FOR SPECIAL DISABLED VETERANS, VETERANS OF THE VIETNAM ERA, AND OTHER ELIGIBLE VETERANS	SEP/2006
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I-40	52.226-1	UTILIZATION OF INDIAN ORGANIZATIONS AND INDIAN-OWNED ECONOMIC ENTERPRISES	JUN/2000
I-41	52.227-1	AUTHORIZATION AND CONSENT (ALTERNATE I dated April 1984)	JUL/1995
I-42	52.227-2	NOTICE AND ASSISTANCE REGARDING PATENT AND COPYRIGHT INFRINGEMENT	AUG/1996
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I-44	52.228-7	INSURANCE--LIABILITY TO THIRD PERSONS	MAR/1996
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I-46	52.230-6	ADMINISTRATION OF COST ACCOUNTING STANDARDS	APR/2005
I-47	52.232-9	LIMITATION ON WITHHOLDING OF PAYMENTS	APR/1984
I-48	52.232-17	INTEREST	JUN/1996
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I-50	52.232-25	PROMPT PAYMENT	OCT/2003
I-51	52.232-33	PAYMENT BY ELECTRONIC FUNDS TRANSFER--CENTRAL CONTRACTOR REGISTRATION	OCT/2003
I-52	52.232-23 (ALT 1)	ASSIGNMENT OF CLAIMS (Alternate I version dated April 1984)	JAN/1986
I-53	52.233-1	DISPUTES	JUL/2002
I-54	52.233-3	PROTEST AFTER AWARD -- (ALTERNATE I, dated JUN 1985)	AUG/1996
I-55	52.233-4	APPLICABLE LAW FOR BREACH OF CONTRACT CLAIM	OCT/2004
I-56	52.242-1	NOTICE OF INTENT TO DISALLOW COSTS	APR/1984
I-57	52.242-3	PENALTIES FOR UNALLOWABLE COSTS	MAY/2001
I-58	52.242-4	CERTIFICATION OF INDIRECT COSTS	JAN/1997
I-59	52.242-13	BANKRUPTCY	JUL/1995
I-60	52.243-2	CHANGES--COST-REIMBURSEMENT (ALTERNATE II dated April 1984)	AUG/1987
I-61	52.243-2	CHANGES--COST-REIMBURSEMENT (ALTERNATE V, dated April 1984))	AUG/1987
I-62	52.243-7	NOTIFICATION OF CHANGES	APR/1984
I-63	52.244-2	SUBCONTRACTS	AUG/1998
I-64	52.244-5	COMPETITION IN SUBCONTRACTING	DEC/1996
I-65	52.244-6	SUBCONTRACTS FOR COMMERCIAL ITEMS	SEP/2006
I-66	52.245-5	GOVERNMENT PROPERTY (COST-REIMBURSEMENT, TIME-AND-MATERIAL, OR LABOR-HOUR CONTRACTS) (Deviation, per DAR Tracking Number 99-00008, 13 July 99)	MAY/2004
I-67	52.246-23	LIMITATION OF LIABILITY	FEB/1997
I-68	52.246-25	LIMITATION OF LIABILITY--SERVICES	FEB/1997
I-69	52.249-6	TERMINATION (COST-REIMBURSEMENT)	MAY/2004
I-70	52.249-14	EXCUSABLE DELAYS	APR/1984
I-71	52.253-1	COMPUTER GENERATED FORMS	JAN/1991
I-72	252.203-7001	PROHIBITION ON PERSONS CONVICTED OF FRAUD OR OTHER DEFENSE CONTRACT-RELATED FELONIES	DEC/2004
I-73	252.204-7003	CONTROL OF GOVERNMENT PERSONNEL WORK PRODUCT	APR/1992
I-74	252.209-7004	SUBCONTRACTING WITH FIRMS THAT ARE OWNED OR CONTROLLED BY THE GOVERNMENT OF A TERRORIST COUNTRY per DoD interim rule, Federal Register 27 Mar 98	MAR/1998
I-75	252.211-7005	SUBSTITUTIONS FOR MILITARY OR FEDERAL SPECIFICATIONS AND STANDARDS	NOV/2005
I-76	252.215-7000	PRICING ADJUSTMENTS	DEC/1991
I-77	252.215-7002	COST ESTIMATING SYSTEM REQUIREMENTS	OCT/1998
I-78	252.219-7003	SMALL, SMALL DISADVANTAGED AND WOMEN-OWNED SMALL BUSINESS SUBCONTRACTING PLAN (DOD CONTRACTS)	APR/1996
I-79	252.225-7012	PREFERENCE FOR CERTAIN DOMESTIC COMMODITIES	JUN/2004
I-80	252.225-7014	PREFERENCE FOR DOMESTIC SPECIALTY METALS (Alternate I dated April 2003)	JUN/2005
I-81	252.225-7016	RESTRICTION ON ACQUISITION OF BALL AND ROLLER BEARINGS	MAR/2006
I-82	252.225-7025	RESTRICTION ON ACQUISITION OF FORGINGS	JUL/2006
I-83	252.225-7031	SECONDARY ARAB BOYCOTT OF ISRAEL	JUN/2005
I-84	252.227-7013	RIGHTS IN TECHNICAL DATA --NONCOMMERCIAL ITEMS	NOV/1995
I-85	252.227-7014	RIGHTS IN NONCOMMERCIAL COMPUTER SOFTWARE AND NONCOMMERCIAL COMPUTER SOFTWARE DOCUMENTATION	JUN/1995
I-86	252.227-7016	RIGHTS IN BID OR PROPOSAL INFORMATION	JUN/1995
I-87	252.227-7017	IDENTIFICATION AND ASSERTION OF USE, RELEASE, OR DISCLOSURE RESTRICTIONS	JUN/1995
I-88	252.227-7019	VALIDATION OF ASSERTED RESTRICTIONS--COMPUTER SOFTWARE	JUN/1995
I-89	252.227-7030	TECHNICAL DATA--WITHHOLDING OF PAYMENT	MAR/2000
I-90	252.232-7010	LEVIES ON CONTRACT PAYMENTS	SEP/2005
I-91	252.242-7004	MATERIAL MANAGEMENT AND ACCOUNTING SYSTEM	NOV/2005
I-92	252.243-7002	REQUESTS FOR EQUITABLE ADJUSTMENT	MAR/1998
I-93	252.244-7000	SUBCONTRACTS FOR COMMERCIAL ITEMS AND COMMERCIAL COMPONENTS (DoD CONTRACTS)	NOV/2005
I-94	252.245-7001	REPORTS OF GOVERNMENT PROPERTY	MAY/1994
I-95	252.247-7023	TRANSPORTATION OF SUPPLIES BY SEA	MAY/2002
I-96	252.247-7024	NOTIFICATION OF TRANSPORTATION OF SUPPLIES BY SEA	MAR/2000
I-97	52.222-2	PAYMENT FOR OVERTIME PREMIUMS	JUL/1990

(a) The use of overtime is authorized under this contract if the overtime premium cost does not exceed -0- or the overtime premium is paid for work--

(1) Necessary to cope with emergencies such as those resulting from accidents, natural disasters, breakdown of production equipment, or occasional production bottlenecks of a sporadic nature;

(2) By indirect-labor employees such as those performing duties in connection with administration, protection, transportation, maintenance, standby plant protection, operation of utilities, or accounting;

(3) To perform tests, industrial processes, laboratory procedures, loading or unloading of transportation conveyances, and operations in flight or afloat that are continuous in nature and cannot reasonably be interrupted or completed otherwise; or

(4) That will result in lower overall costs to the Government.

(b) Any request for estimated overtime premiums that exceeds the amount specified above shall include all estimated overtime for contract completion and shall--

(1) Identify the work unit; e.g., department or section in which the requested overtime will be used, together with present workload, staffing, and other data of the affected unit sufficient to permit the Contracting Officer to evaluate the necessity for the overtime;

(2) Demonstrate the effect that denial of the request will have on the contract delivery or performance schedule;

(3) Identify the extent to which approval of overtime would affect the performance or payments in connection with other Government contracts, together with identification of each affected contract; and

(4) Provide reasons why the required work cannot be performed by using multishift operations or by employing additional personnel.

(End of clause)

I-98 52.223-7 NOTICE OF RADIOACTIVE MATERIALS JAN/1997

(a) The Contractor shall notify the Contracting Officer or designee, in writing 60 days prior to the delivery of, or prior to completion of any servicing required by this contract of, items containing either (1) radioactive material requiring specific licensing under the regulations issued pursuant to the Atomic Energy Act of 1954, as amended, as set forth in Title 10 of the Code of Federal Regulations, in effect on the date of this contract, or (2) other radioactive material not requiring specific licensing in which the specific activity is greater than 0.002 microcuries per gram or the activity per item equals or exceeds 0.01 microcuries. Such notice shall specify the part or parts of the items which contain radioactive materials, a description of the materials, the name and activity of the isotope, the manufacturer of the materials, and any other information known to the Contractor which will put users of the items on notice as to the hazards involved (OMB No. 9000-0107).

(b) If there has been no change affecting the quantity of activity, or the characteristics and composition of the radioactive material from deliveries under this contract or prior contracts the Contractor may request that the Contracting Officer or designee waive the notice requirement in paragraph (a) of this clause. Any such request shall-

(1) Be submitted in writing;

(2) State that the quantity of activity, characteristics, and composition of the radioactive material have not changed; and

(3) Cite the contract number on which the prior notification was submitted and the contracting office to which it was submitted.

(c) All items, parts, or subassemblies which contain radioactive materials in which the specific activity is greater than 0.002 microcuries per gram or activity per item equals or exceeds 0.01 microcuries, and all containers in which such items, parts or subassemblies are delivered to the Government shall be clearly marked and labeled as required by the latest revision of MIL-STD 129 in effect on the date of the contract.

(d) This clause, including this paragraph (d), shall be inserted in all subcontracts for radioactive materials meeting the criteria in paragraph (a) of this clause.

[End of Clause]

I-99 52.204-7 CENTRAL CONTRACTOR REGISTRATION JUL/2006

(a) Definitions. As used in this clause--

"Central Contractor Registration (CCR) database" means the primary Government repository for contractor information required for the conduct of business with the Government.

"Commercial and Government Entity (CAGE) code" means-

(1) A code assigned by the Defense Logistics Information Service (DLIS) to identify a commercial or Government entity; or

(2) A code assigned by a member of the North Atlantic Treaty Organization that DLIS records and maintains in the CAGE master file. This type of code is known as an "NCAGE code."

"Data Universal Numbering System (DUNS) number" means the 9-digit number assigned by Dun and Bradstreet, Inc. (D&B) to identify unique business entities.

"Data Universal Numbering System +4 (DUNS+4) number" means the DUNS number assigned by D&B plus a 4-character suffix that may be assigned by a business concern. (D&B has no affiliation with this 4-character suffix.) This 4-character suffix may be assigned at the discretion of the business concern to establish additional CCR records for identifying alternative Electronic Funds Transfer (EFT) accounts (see Subpart 32.11 of the Federal Acquisition Regulation) for the same parent concern.

"Registered in the CCR database" means that-

(1) The Contractor has entered all mandatory information, including the DUNS number or the DUNS+4 number, into the CCR database;

(2) The Government has validated all mandatory data fields, to include validation of the Taxpayer Identification Number (TIN) with the Internal Revenue Service (IRS), and has marked the record ``Active''. The Contractor will be required to provide consent for TIN validation to the Government as a part of the CCR registration process.

(b)

(1) By submission of an offer, the offeror acknowledges the requirement that a prospective awardee shall be registered in the CCR database prior to award, during performance, and through final payment of any contract, basic agreement, basic ordering agreement, or blanket purchasing agreement resulting from this solicitation.

(2) The offeror shall enter, in the block with its name and address on the cover page of its offer, the annotation DUNS or DUNS+4 followed by the DUNS or DUNS+4 number that identifies the offerors name and address exactly as stated in the offer. The DUNS number will be used by the Contracting Officer to verify that the offeror is registered in the CCR database.

(c) If the offeror does not have a DUNS number, it should contact Dun and Bradstreet directly to obtain one.

(1) An offeror may obtain a DUNS number

(i) If located within the United States, by calling Dun and Bradstreet at 1-866-705-5711 or via the Internet at http://www.dnb.com/ ; or

(ii) If located outside the United States, by contacting the local Dun and Bradstreet office.

(2) The offeror should be prepared to provide the following information:

(i) Company legal business name.

(ii) Tradestyle, doing business, or other name by which your entity is commonly recognized.

(iii) Company physical street address, city, state and Zip Code.

(iv) Company mailing address, city, state and Zip Code (if separate from physical).

(v) Company telephone number.

(vi) Date the company was started.

(vii) Number of employees at your location.

(viii) Chief executive officer/key manager.

(ix) Line of business (industry).

(x) Company Headquarters name and address (reporting relationship within your entity).

(d) If the Offeror does not become registered in the CCR database in the time prescribed by the Contracting Officer, the Contracting Officer will proceed to award to the next otherwise successful registered Offeror.

(e) Processing time, which normally takes 48 hours, should be taken into consideration when registering. Offerors who are not registered should consider applying for registration immediately upon receipt of this solicitation.

(f) The Contractor is responsible for the accuracy and completeness of the data within the CCR database, and for any liability resulting from the Governments reliance on inaccurate or incomplete data. To remain registered in the CCR database after the initial registration, the Contractor is required to review and update on an annual basis from the date of initial registration or subsequent updates its information in the CCR database to ensure it is current, accurate and complete. Updating information in the CCR does not alter the terms and conditions of this contract and is not a substitute for a properly executed contractual document.

(1)

(i) If a Contractor has legally changed its business name, doing business as name, or division name (whichever is shown on the contract), or has transferred the assets used in performing the contract, but has not completed the necessary requirements regarding novation and change-of-name agreements in Subpart 42.12, the Contractor shall provide the responsible Contracting Officer a minimum of one business days written notification of its intention to:

(A) Change the name in the CCR database;

(B) Comply with the requirements of Subpart 42.12 of the FAR;

(C) Agree in writing to the timeline and procedures specified by the responsible Contracting Officer. The Contractor must provide with the notification sufficient documentation to support the legally changed name.

(ii) If the Contractor fails to comply with the requirements of paragraph (g)(1)(i) of this clause, or fails to perform the agreement at paragraph (g)(1)(i)(C) of this clause, and, in the absence of a properly executed novation or change-of-name agreement, the CCR information that shows the Contractor to be other than the Contractor indicated in the contract will be considered to be incorrect information within the meaning of the Suspension of Payment paragraph of the electronic funds transfer (EFT) clause of this contract.

(2) The Contractor shall not change the name or address for EFT payments or manual payments, as appropriate, in the CCR record to reflect an assignee for the purpose of assignment of claims (see FAR Subpart 32.8, Assignment of Claims). Assignees shall be separately registered in the CCR database. Information provided to the Contractors CCR record that indicates payments, including those made by EFT, to an ultimate recipient other than that Contractor will be considered to be incorrect information within the meaning of the Suspension of payment paragraph of the EFT clause of this contract.

(g) Offerors and Contractors may obtain information on registration and annual confirmation requirements via the Internet at http://www.ccr.gov/ or by calling 1-888-227-2423, or 269-961-5757.

[End of Clause]

I-100	52.222-39	NOTIFICATION OF EMPLOYEE RIGHTS CONCERNING PAYMENT OF UNION DUES OR FEES	DEC/2004

(a) Definition. As used in this clause--

United States means the 50 States, the District of Columbia, Puerto Rico, the Northern Mariana Islands, American Samoa, Guam, the U.S. Virgin Islands, and Wake Island.

(b) Except as provided in paragraph (e) of this clause, during the term of this contract, the Contractor shall post a notice, in the form of a poster, informing employees of their rights concerning union membership and payment of union dues and fees, in conspicuous places in and about all its plants and offices, including all places where notices to employees are customarily posted. The notice shall include the following information (except that the information pertaining to National Labor Relations Board shall not be included in notices posted in the plants or offices of carriers subject to the Railway Labor Act, as amended (45 U.S.C. 151-188)).

Notice to Employees

Under Federal law, employees cannot be required to join a union or maintain membership in a union in order to retain their jobs. Under certain conditions, the law permits a union and an employer to enter into a union-security agreement requiring employees to pay uniform periodic dues and initiation fees. However, employees who are not union members can object to the use of their payments for certain purposes and can only be required to pay their share of union costs relating to collective bargaining, contract administration, and grievance adjustment.

If you do not want to pay that portion of dues or fees used to support activities not related to collective bargaining, contract administration, or grievance adjustment, you are entitled to an appropriate reduction in your payment. If you believe that you have been required to pay dues or fees used in part to support activities not related to collective bargaining, contract administration, or grievance adjustment, you may be entitled to a refund and to an appropriate reduction in future payments.

For further information concerning your rights, you may wish to contact the National Labor Relations Board (NLRB) either at one of its Regional offices or at the following address or toll free number:

National Labor Relations Board
Division of Information
1099 14th Street, N.W.
Washington, DC 20570
1-866-667-6572
1-866-316-6572 (TTY)

To locate the nearest NLRB office, see NLRB's website at http://www.nlrb.gov .

(c) The Contractor shall comply with all provisions of Executive Order 13201 of February 17, 2001, and related implementing regulations at 29 CFR part 470, and orders of the Secretary of Labor.

(d) In the event that the Contractor does not comply with any of the requirements set forth in paragraphs (b), (c), or (g), the Secretary may direct that this contract be cancelled, terminated, or suspended in whole or in part, and declare the Contractor ineligible for further Government contracts in accordance with procedures at 29 CFR part 470, Subpart B--Compliance Evaluations, Complaint Investigations and Enforcement Procedures. Such other sanctions or remedies may be imposed as are provided by 29 CFR part 470, which implements Executive Order 13201, or as are otherwise provided by law.

(e) The requirement to post the employee notice in paragraph (b) does not apply to--

(1) Contractors and subcontractors that employ fewer than 15 persons;

(2) Contractor establishments or construction work sites where no union has been formally recognized by the Contractor or certified as the exclusive bargaining representative of the Contractor's employees;

(3) Contractor establishments or construction work sites located in a jurisdiction named in the definition of the United States in which the law of that jurisdiction forbids enforcement of union-security agreements;

(4) Contractor facilities where upon the written request of the Contractor, the Department of Labor Deputy Assistant Secretary for Labor-Management Programs has waived the posting requirements with respect to any of the Contractor's facilities if the Deputy Assistant Secretary finds that the Contractor has demonstrated that--

(i) The facility is in all respects separate and distinct from activities of the Contractor related to the performance of a contract; and

(ii) Such a waiver will not interfere with or impede the effectuation of the Executive order; or

(5) Work outside the United States that does not involve the recruitment or employment of workers within the United States.

(f) The Department of Labor publishes the official employee notice in two variations; one for contractors covered by the Railway Labor Act and a second for all other contractors. The Contractor shall--

(1) Obtain the required employee notice poster from the Division of Interpretations and Standards, Office of Labor-Management Standards, U.S. Department of Labor, 200 Constitution Avenue, NW, Room N-5605, Washington, DC 20210, or from any field office of the Department's Office of Labor-Management Standards or Office of Federal Contract Compliance Programs;

(2) Download a copy of the poster from the Office of Labor-Management Standards website at http://www.olms.dol.gov; or

(3) Reproduce and use exact duplicate copies of the Department of Labor's official poster.

(g) The Contractor shall include the substance of this clause in every subcontract or purchase order that exceeds the simplified acquisition threshold, entered into in connection with this contract, unless exempted by the Department of Labor Deputy Assistant Secretary for Labor-Management Programs on account of special circumstances in the national interest under authority of 29 CFR 470.3(c). For indefinite quantity subcontracts, the Contractor shall include the substance of this clause if the value of orders in any calendar year of the subcontract is expected to exceed the simplified acquisition threshold. Pursuant to 29 CFR part 470, Subpart B--Compliance Evaluations, Complaint Investigations and Enforcement Procedures, the Secretary of Labor may direct the Contractor to take such action in the enforcement of these regulations, including the imposition of sanctions for noncompliance with respect to any such subcontract or purchase order. If the Contractor becomes involved in litigation with a subcontractor or vendor, or is threatened with such involvement, as a result of such direction, the Contractor may request the United States, through the Secretary of Labor, to enter into such

litigation to protect the interests of the United States.

[End of Clause]

I-101 52.223-11 OZONE-DEPLETING SUBSTANCES MAY/2001

(a) Definition. Ozone-depleting substance, as used in this clause, means any substance the Evironnmental Protection Agency designates in 40 CFR part 82 as--

(1) Class I, including, but not limited to, chlorofluorocarbons, halons, carbon tetrachloride, and methyl chloroform; or

(2) Class II, including but not limited to, hydrochlorofluorocarbons.

(b) The Contractor shall label products which contain or are manufactured with ozone-depleting substances in the manner and to the extent required by 42 U.S.C. 7671j(b), (c), and (d) and 40 CFR Part 82, Subpart E, as follows:

WARNING: Contains (or manufactured with, if applicable) _____ * _____, a substance(s) which harm(s) public health and environment by destroying ozone in the upper atmosphere.

*The Contractor shall insert the name of the substance(s).

[End of Clause]

I-102 52.252-6 AUTHORIZED DEVIATIONS IN CLAUSES APR/1984

(a) The use in this solicitation or contract of any Federal Acquisition Regulation (48 CFR Chapter 1) clause with an authorized deviation is indicated by the addition of (DEVIATION) after the date of the clause.

(b) The use in this solicitation or contract of any DoD FAR Supplement (DFARS) (48 CFR 2) clause with an authorized deviation is indicated by the addition of (DEVIATION) after the name of the regulation.

[End of Clause]

I-103 252.223-7001 HAZARD WARNING LABELS DEC/1991

(a) Hazardous material, as used in this clause, is defined in the Hazardous Material Identification and Material Safety Data clause of this contract.

(b) The Contractor shall label the item package (unit container) of any hazardous material to be delivered under this contract in accordance with the Hazard Communication Standard (29 CFR 1910.1200 et seq). The Standard requires that the hazard warning label conform to the requirements of the standard unless the material is otherwise subject to the labelling requirements of one of the following statutes:

(1) Federal Insecticide, Fungicide and Rodenticide Act;

(2) Federal Food, Drug and Cosmetics Act;

(3) Consumer Product Safety Act;

(4) Federal Hazardous Substances Act; or

(5) Federal Alcohol Administration Act.

(c) The Offeror shall list which hazardous material listed in the Hazardous Material Identification and Material Safety Data clause of this contract will be labelled in accordance with one of the Acts in paragraphs (b)(1) through (5) of this clause instead of the Hazard Communication Standard. Any hazardous material not listed will be interpreted to mean that a label is required in accordance with the Hazard Communication Standard.

MATERIAL (If None, Insert None.)	ACT
_____	_____

(d) The apparently successful Offeror agrees to submit, before award, a copy of the hazard warning label for all hazardous materials not listed in paragraph (c) of this clause. The Offeror shall submit the label with the Material Safety Data Sheet being furnished under the Hazardous Material Identification and Material Safety Data clause of this contract.

(e) The Contractor shall also comply with MIL-STD-129, Marking for Shipment and Storage (including revisions adopted during the term of this contract).

[End of Clause]

I-104 252.225-7015 RESTRICTION ON ACQUISITION OF HAND OR MEASURING TOOLS JUN/2005

Hand or measuring tools delivered under this contract shall be produced in the United States or its outlying areas.

[End of Clause]

I-105 52.204-4009 (TACOM) MANDATORY USE OF CONTRACTOR TO GOVERNMENT ELECTRONIC COMMUNICATION MAR/2005

(a) All references in the contract to the submission of written documentation shall mean electronic submission. All electronic submissions shall be in the formats and media described in the website: http://contracting.tacom.army.mil/ebidnotice.htm

(b) This shall include all written unclassified communications between the Government and the Contractor except contract awards and contract modifications which shall be posted on the internet. Return receipt shall be used if a commercial application is available. Classified information shall be handled in full accordance with the appropriate security requirements.

(c) In order to be contractually binding, all Government communications requiring a Contracting Officer signature must be sent from the Contracting Officer's e-mail address. The Contractor shall designate the personnel with signature authority who can contractually bind the contractor. All binding contractor communication shall be sent from this contractor e-mail address(es).

(d) Upon award, the Contractor shall provide the Contracting Officer with a list of e-mail addresses for all administrative and technical personnel assigned to this contract.

(e) Unless exempted by the Procuring Contracting Officer in writing, all unclassified written communication after contract award shall be transmitted electronically.

[End of Clause]

I-106 52.219-4070 PILOT MENTOR-PROTEGE PROGRAM APR/2006

(a) The Pilot Mentor-Protege Program does not apply to small business concerns.

(b) Utilization of the Pilot Mentor-Protege Program (hereafter referred to as the Program) is encouraged. Under the Program, eligible companies approved as mentor firms enter into a mentor-protege agreement with eligible protege firms. The goal of the program is to provide appropriate developmental assistance to enhance the capabilities of the protege firm. The Mentor firm may be eligible for cost reimbursement or credit against their applicable subcontracting goals.

(c) Mentor firms are encouraged to identify and select concerns that are defined as emerging small business concerns, small disadvantaged business, women-owned small business, HUBZone small business, service-disabled veteran-owned small business, veteran-owned small business or an eligible entity employing the severely disabled.

(d) Full details of the program are located at http://www.acq.osd.mil/sadbu/mentor protege/, http://sellingtoarmy.info/, DFARS Appendix I, and DFARS Subpart 219.71, "Pilot Mentor-Protege Program."

(e) For additional questions after reviewing the information provided, contact the Office of Small Business Programs serving your area.

[End of Clause]

Name of Offeror or Contractor: GENERAL DYNAMICS ROBOTIC SYSTEMS

SECTION J - LIST OF ATTACHMENTS

List of Addenda	Title	Date	Number of Pages	Transmitted By
Exhibit A	CONTRACT DATA REQUIREMENTS LIST (CDRL) DD FORM 1423			
Attachment 0001	SAFE OPS PERMANCE SPECIFICATIONS			
Attachment 0002	WBS AND WBS DICTIONARY			
Attachment 0003	GOVERNMENT FURNISHED EQUIPMENT			

CONTRACT DATA REQUIREMENTS LIST Form Approval OMB No. 0704-0188

A. CONTRACT LINE ITEM NO B. EXHIBIT: C. CATEGORY:
D. SYSTEM/ITEM: UGV SAFE OPERATIONS E. CONTRACT/PR NO.: F. CONTRACTOR:

1. DATA ITEM NO. A001 2. TITLE OF DATA ITEM: SCIENTIFIC AND TECHNICAL REPORTS
3. SUBTITLE: FINAL REPORT
4. AUTHORITY DI-MISC-80711A 5. CONTRACT REFERENCE: C.9.2.1 6. REQUIRING OFFICE: AMSRD-TAR-R
7. DD250 REQ: LT 8. APP CODE: 9. DIST. STATEMENT REQUIRED: 10. FREQUENCY: ONCE
11.AS OF DATE: N/A 12. DATE OF FIRST SUB: EOC 13. DATE OF SUBS.SUB:

14. DISTRIBUTION A. ADDRESSEES	B. COPIES DRAFT	FINAL
brad.brumm@us.army.mil	01	01
rosalie.a.williamson@us.army.mil	00	01
15. TOTAL:	01	02

16. REMARKS:
Final report is due at the end of the contract.

17. PRICE GROUP: 18. ESTIMATED TOTAL PRICE:

A. CONTRACT LINE ITEM NO B. EXHIBIT: C. CATEGORY:
D. SYSTEM/ITEM: UGV SAFE OPERATIONS E. CONTRACT/PR NO.: F. CONTRACTOR:

1. DATA ITEM NO. A002 2. TITLE OF DATA ITEM: SCIENTIFIC AND TECHNICAL REPORTS
3. SUBTITLE: SYSTEM DOCUMENTATION
4. AUTHORITY DI-MISC-80711A 5. CONTRACT REFERENCE:C.9.2.2 6. REQUIRING OFFICE: AMSRD-TAR-R
7. DD250 REQ: LT 8. APP CODE: 9. DIST. STATEMENT REQUIRED: 10. FREQUENCY: ONCE
11.AS OF DATE: 12. DATE OF FIRST SUB: EOC 13. DATE OF SUBS.SUB:

14. DISTRIBUTION A. ADDRESSEES	B. COPIES DRAFT	FINAL
brad.brumm@us.army.mil	01	01
rosalie.a.williamson@us.army.mil	00	01
15. TOTAL:	01	02

16. REMARKS:
System documentation is to be delivered concurrently with the delivery of the UGV Safe Operations vehicles.

17. PRICE GROUP: 18. ESTIMATED TOTAL PRICE:

G. PREPARED BY: I. APPROVED BY:
H. DATE: J. DATE:

CONTRACT DATA REQUIREMENTS LIST Form Approval OMB No. 0704-0188

A. CONTRACT LINE ITEM NO B. EXHIBIT: C. CATEGORY:
D. SYSTEM/ITEM: UGV SAFE OPERATIONS E. CONTRACT/PR NO.: F. CONTRACTOR:

1. DATA ITEM NO. A003 2. TITLE OF DATA ITEM: SCIENTIFIC AND TECHNICAL REPORTS
3. SUBTITLE: SAFE OPS REQUIREMENTS CROSSWALK
4. AUTHORITY DI-MISC-80711A 5. CONTRACT REFERENCE: C.4.1.6, C.9.2.3 6. REQUIRING OFFICE: AMSRD-TAR-R

7. DD250 REQ: LT 8. APP CODE: 9. DIST. STATEMENT REQUIRED: 10. FREQUENCY: ASREQ
11.AS OF DATE: N/A 12. DATE OF FIRST SUB: 60DAC 13. DATE OF SUBS.SUB: ASREQ

14. DISTRIBUTION A. ADDRESSEES	B. COPIES DRAFT	FINAL
brad.brumm@us.army.mil	01	01
rosalie.a.williamson@us.army.mil	00	01
15. TOTAL:	01	02

16. REMARKS:
Due 60 days after contract award, and will be updated as required to address current FCS risks.

17. PRICE GROUP: 18. ESTIMATED TOTAL PRICE:

A. CONTRACT LINE ITEM NO B. EXHIBIT: C. CATEGORY:
D. SYSTEM/ITEM: UGV SAFE OPERATIONS E. CONTRACT/PR NO.: F. CONTRACTOR:

1. DATA ITEM NO. A004 2. TITLE OF DATA ITEM: SCIENTIFIC AND TECHNICAL REPORTS
3. SUBTITLE: INTEGRATION PLAN
4. AUTHORITY DI-MISC-80711A 5. CONTRACT REFERENCE: C.3.5, C.4.1.2, C.4.1.3, C.6.2.3, C.9.2.4 6. REQUIRING OFFICE: AMSRD-TAR-R
7. DD250 REQ: LT 8. APP CODE: 9. DIST. STATEMENT REQUIRED: 10. FREQUENCY: ONCE
11.AS OF DATE: N/A 12. DATE OF FIRST SUB: 45DP-CDR 13. DATE OF SUBS.SUB:

14. DISTRIBUTION A. ADDRESSEES	B. COPIES DRAFT	FINAL
brad.brumm@us.army.mil	01	01
rosalie.a.williamson@us.army.mil	00	01
15. TOTAL:	01	02

16. REMARKS:
Integration Plan DRAFT is due to the Govt 45 days prior to the Critical Design Review (CDR), the final Integration Plan will be presented at the CDR.

17. PRICE GROUP: 18. ESTIMATED TOTAL PRICE:

G. PREPARED BY: I. APPROVED BY:
H. DATE: J. DATE:

CONTRACT DATA REQUIREMENTS LIST Form Approval OMB No. 0704-0188

A. CONTRACT LINE ITEM NO B. EXHIBIT: C. CATEGORY:
D. SYSTEM/ITEM: UGV SAFE OPERATIONS E. CONTRACT/PR NO.: F. CONTRACTOR:

1. DATA ITEM NO. A005 2. TITLE OF DATA ITEM: SCIENTIFIC AND TECHNICAL REPORTS
3. SUBTITLE: TEST, EVALUATION, AND SUPPORT PLAN
4. AUTHORITY DI-MISC-80711A 5. CONTRACT REFERENCE: C.6.3.1, C.9.2.5 6. REQUIRING OFFICE: AMSRD-TAR-R

7. DD250 REQ: LT 8. APP CODE: 9. DIST. STATEMENT REQUIRED: 10. FREQUENCY: ASREQ
11.AS OF DATE: N/A 12. DATE OF FIRST SUB: 60DP-EXP 13. DATE OF SUBS.SUB: ASREQ

14. DISTRIBUTION A. ADDRESSEES	B. COPIES DRAFT	FINAL
brad.brumm@us.army.mil	01	01
rosalie.a.williamson@us.army.mil	00	01
15. TOTAL:	01	02

16. REMARKS:
One due for each experiment. Due 60 prior to each experiment.

17. PRICE GROUP: 18. ESTIMATED TOTAL PRICE:

A. CONTRACT LINE ITEM NO B. EXHIBIT: C. CATEGORY:
D. SYSTEM/ITEM: UGV SAFE OPERATIONS E. CONTRACT/PR NO.: F. CONTRACTOR:

1. DATA ITEM NO. A006 2. TITLE OF DATA ITEM: SCIENTIFIC AND TECHNICAL REPORTS
3. SUBTITLE: DETAILED EXPERIMENT REPORT
4. AUTHORITY DI-MISC-80711A 5. CONTRACT REFERENCE: C.6.5, C.9.2.6 6. REQUIRING OFFICE: AMSRD-TAR-R

7. DD250 REQ: LT 8. APP CODE: 9. DIST. STATEMENT REQUIRED: 10. FREQUENCY: ASREQ
11.AS OF DATE: N/A 12. DATE OF FIRST SUB: 30DA-EXP 13. DATE OF SUBS.SUB:

14. DISTRIBUTION A. ADDRESSEES	B. COPIES DRAFT	FINAL
brad.brumm@us.army.mil	01	01
rosalie.a.williamson@us.army.mil	00	01
15. TOTAL:	01	02

16. REMARKS:
One due for each experiment. Draft due 30 days after completion of experiment. Final due 30 days after Govt comments.

17. PRICE GROUP: 18. ESTIMATED TOTAL PRICE:

G. PREPARED BY: I. APPROVED BY:
H. DATE: J. DATE:

CONTRACT DATA REQUIREMENTS LIST Form Approval OMB No. 0704-0188

A. CONTRACT LINE ITEM NO B. EXHIBIT: C. CATEGORY:
D. SYSTEM/ITEM: UGV SAFE OPERATIONS E. CONTRACT/PR NO.: F. CONTRACTOR:

1. DATA ITEM NO. A007 2. TITLE OF DATA ITEM: SCIENTIFIC AND TECHNICAL REPORTS
3. SUBTITLE: MINUTES AND ACTION ITEMS
4. AUTHORITY DI-MISC-80711A 5. CONTRACT REFERENCE: C.3.7.3 C.9.2.7 6. REQUIRING OFFICE: AMSRD-TAR-R

7. DD250 REQ: LT 8. APP CODE: 9. DIST. STATEMENT REQUIRED: 10. FREQUENCY: ASREQ
11.AS OF DATE: N/A 12. DATE OF FIRST SUB: ASGEN 13. DATE OF SUBS.SUB: ASREQ

14. DISTRIBUTION A. ADDRESSEES	B. COPIES DRAFT	FINAL
brad.brumm@us.army.mil	00	01
15. TOTAL:	00	01

16. REMARKS:
Contractor is responsible for taking notes and tracking action items at all meetings and teleconferences.

17. PRICE GROUP: 18. ESTIMATED TOTAL PRICE:

A. CONTRACT LINE ITEM NO B. EXHIBIT: C. CATEGORY:
D. SYSTEM/ITEM: UGV SAFE OPERATIONS E. CONTRACT/PR NO.: F. CONTRACTOR:

1. DATA ITEM NO. A008 2. TITLE OF DATA ITEM: SCIENTIFIC AND TECHNICAL REPORTS
3. SUBTITLE: CONTRACTOR'S PROGRESS, STATUS, AND MANAGEMENT REPORT
4. AUTHORITY DI-MGMT-80227 5. CONTRACT REFERENCE: C.3.6.4, C.9.2.8 6. REQUIRING OFFICE: AMSRD-TAR-R

7. DD250 REQ: LT 8. APP CODE: 9. DIST. STATEMENT REQUIRED: 10. FREQUENCY: MONTHLY
11.AS OF DATE: N/A 12. DATE OF FIRST SUB: 35DAC 13. DATE OF SUBS.SUB:

14. DISTRIBUTION A. ADDRESSEES	B. COPIES DRAFT	FINAL
brad.brumm@us.army.mil	00	01
rosalie.a.williamson@us.army.mil	00	01
15. TOTAL:	00	02

16. REMARKS:
Due 5 business days after the end of the month.

17. PRICE GROUP: 18. ESTIMATED TOTAL PRICE:

G. PREPARED BY: I. APPROVED BY:

H. DATE: J. DATE:

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A. CONTRACT LINE ITEM NO B. EXHIBIT: C. CATEGORY:
D. SYSTEM/ITEM: UGV SAFE OPERATIONS E. CONTRACT/PR NO.: F. CONTRACTOR:

1. DATA ITEM NO. A009 2. TITLE OF DATA ITEM: SCIENTIFIC AND TECHNICAL REPORTS
3. SUBTITLE: CONTRACT PERFORMANCE REPORT
4. AUTHORITY DI-MGT-81466A 5. CONTRACT REFERENCE: C.3.6.5, C.9.2.9 6. REQUIRING OFFICE: AMSRD-TAR-R

7. DD250 REQ: LT 8. APP CODE: 9. DIST. STATEMENT REQUIRED: 10. FREQUENCY: MONTHLY
11.AS OF DATE: N/A 12. DATE OF FIRST SUB: 44DAC 13. DATE OF SUBS.SUB: ASREQ

14. DISTRIBUTION A. ADDRESSEES	B. COPIES DRAFT	FINAL
brad.brumm@us.army.mil	00	01
rosalie.a.williamson@us.army.mil	00	01
15. TOTAL:	00	02

16. REMARKS:
Due 2 weeks after the end of the month.

17. PRICE GROUP: 18. ESTIMATED TOTAL PRICE:

A. CONTRACT LINE ITEM NO B. EXHIBIT: C. CATEGORY:
D. SYSTEM/ITEM: UGV SAFE OPERATIONS E. CONTRACT/PR NO.: F. CONTRACTOR:

1. DATA ITEM NO. A010 2. TITLE OF DATA ITEM: SCIENTIFIC AND TECHNICAL REPORTS
3. SUBTITLE: SOFTWARE
4. AUTHORITY DI-MISC-80711A 5. CONTRACT REFERENCE: C.9.1 6. REQUIRING OFFICE: AMSRD-TAR-R
7. DD250 REQ: LT 8. APP CODE: 9. DIST. STATEMENT REQUIRED: 10. FREQUENCY: ASREQ
11.AS OF DATE: N/A 12. DATE OF FIRST SUB: 15DA-EXP 13. DATE OF SUBS.SUB:

14. DISTRIBUTION A. ADDRESSEES	B. COPIES DRAFT	FINAL
brad.brumm@us.army.mil	00	01
rosalie.a.williamson@us.army.mil	00	01
15. TOTAL:	00	02

16. REMARKS:
Due 15 days after the completion of each experiment. Final delivery due with the Final Report (CDRL A001).

17. PRICE GROUP: 18. ESTIMATED TOTAL PRICE:

G. PREPARED BY: I. APPROVED BY:

H. DATE: J. DATE:

DD FORM 1423-E, APR 00 PAGE 05 OF 06

CONTRACT DATA REQUIREMENTS LIST Form Approval OMB No. 0704-0188

Public reporting burden for this collection of information is estimated to average 440 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Department of Defense, Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188), Washington, DC 20503. Please DO NOT RETURN your form to either these addresses. Send completed form to the Government Issuing Contracting Officer for the Contract/PR No. listed in Block E.

A. CONTRACT LINE ITEM NO B. EXHIBIT: C. CATEGORY:
D. SYSTEM/ITEM: UGV SAFE OPERATIONS E. CONTRACT/PR NO.: F. CONTRACTOR:

1. DATA ITEM NO. A011 2. TITLE OF DATA ITEM: SCIENTIFIC AND TECHNICAL REPORTS
3. SUBTITLE: SAFETY ASSESSMENT REPORT
4. AUTHORITY DI-SAFT-80102B 5. CONTRACT REFERENCE: C.9.2.11 6. REQUIRING OFFICE: AMSRD-TAR-R
7. DD250 REQ: LT 8. APP CODE: 9. DIST. STATEMENT REQUIRED: 10. FREQUENCY: ASREQ
11.AS OF DATE: N/A 12. DATE OF FIRST SUB: 60 DP-EET 13. DATE OF SUBS.SUB: ASREQ

14. DISTRIBUTION A. ADDRESSEES	B. COPIES DRAFT	FINAL
brad.brumm@us.army.mil	00	01
rosalie.a.williamson@us.army.mil	00	01
15. TOTAL:	00	02

16. REMARKS:
Due 60 days prior to each Engineering Evaluation Test (EET).

17. PRICE GROUP: 18. ESTIMATED TOTAL PRICE:

A. CONTRACT LINE ITEM NO B. EXHIBIT: C. CATEGORY:
D. SYSTEM/ITEM: E. CONTRACT/PR NO.: F. CONTRACTOR:

1. DATA ITEM NO. 2. TITLE OF DATA ITEM:
3. SUBTITLE:
4. AUTHORITY 5. CONTRACT REFERENCE: 6. REQUIRING OFFICE:
7. DD250 REQ: 8. APP CODE: 9. DIST. STATEMENT REQUIRED: 10. FREQUENCY:
11.AS OF DATE: 12. DATE OF FIRST SUB: 13. DATE OF SUBS.SUB:

14. DISTRIBUTION A. ADDRESSEES	B. COPIES DRAFT	FINAL
15. TOTAL:	00	02

16. REMARKS:

17. PRICE GROUP: 18. ESTIMATED TOTAL PRICE:

G. PREPARED BY: I. APPROVED BY:
H. DATE: J. DATE:

Attachment 1 Performance Specification

TABLE OF CONTENTS

1. SCOPE

1.1. Identification

This document establishes the performance, design, development, test, and acceptance requirements for the UGV Safe Operations system contract. This specification defines the performance and system requirements for the UGV Safe Operations system. Inspection and acceptance requirements will be set forth in Section (4.0). This document defines terminology, establishes final performance criteria and intermediate goals, and requires Contractor development of Quality Assurance procedures. This specification will form the basis for establishing and evaluating the vehicles physical characteristics and performance.

1.2 UGV Safe Operations System Description

1.2.1 The UGV Safe Operations contract will produce two (2) testbed vehicles capable of testing and evaluation of the UGV Safe Operations integrated system. Each of the UGV Safe Operations testbeds shall consist of one GDRS Tactical Autonomous Combat-Chassis (TAC-C), one GDRS Autonomous Navigation System (ANS), and computing hardware capable of running the chosen developed algorithms.

1.3 Document Overview

This document conforms to the format and content preparation instructions of MIL-STD-961D, Department of Defense Standard Practice for Defense Specifications.

Section 1 of this performance specification identifies the UGV Safe Operations systems and provides a brief overview.

Section 2 provides a list of documents referenced in the body of this performance specification.

Section 3 specifies the system level requirements for UGV Safe Operations.

Section 4 specifies the method(s) to be used to ensure each requirement of Section 3 has been satisfied.

Section 5 specifies the Quality Assurance provisions for the UGV Safe Operations.

Section 6 contains notes and a list of acronyms and abbreviations used in this performance specification.

2. APPLICABLE DOCUMENTS

2.1 General

Additional documents form a part of this Performance Specification to the extent specified herein. Unless otherwise specified, the issues of the documents that are DoD adopted are those listed in the issue of the Department of Defense Index of Specifications and Standards (DODISS) cited in the solicitation. Unless otherwise specified, the issues of documents not listed in the DODISS will be the issue of the documents, which is current on the date of the solicitation.

2.2 Government documents

SPECIFICATIONS:
Federal
Military
Other Government Agency
OSHA Title 29 Code of Federal Regulations

STANDARDS:
Federal
Military
MIL-STD-461 Requirements for the Control of Electromagnetic Interference Emissions and Susceptibility

MIL-STD-882 System Safety Program Requirements

MIL-STD-1180 Safety Standards for Military Ground Vehicles

MIL-STD-1275 Characteristics of 28 Volt DC Electrical Systems in Military Vehicles

MIL-STD-1472 Human Engineering Design Criteria for Military Systems, Equipment and Facilities

Other Government Agency

DRAWINGS:
OTHER PUBLICATIONS:
Manuals
Regulations
Handbooks

Bulletins
MIL-HDBK-759 Human Factors Engineering Design for Army Materiel
Bulletins
Miscellaneous

2.3 Non-Government documents

SPECIFICATIONS:
STANDARDS:
International Standard

DRAWINGS:
OTHER PUBLICATIONS:

2.4 Order of Precedence.

In the event of a conflict between the text of this Performance Specification and the references cited herein, the text of this Performance Specification will take precedence. Nothing in this Performance Specification will supersede applicable laws and regulations unless a specific exemption has been obtained.

3. SYSTEM REQUIREMENTS

3.1 Definitions: The following definitions are used throughout this document.

Primary Roads - Two or more lanes, all-weather, maintained, hard surface (paved) roads with good driving visibility used for heavy and high density traffic.

Secondary Roads - Two lane, all weather, occasionally maintained, hard or loose surface (e.g., large rock, paved, crushed rock, gravel) roads intended for medium-weight, low-density traffic.

Cross Country:

Trails: One lane, dry-weather, unimproved, seldom maintained loose surface roads intended for low-density traffic.

Other: Vehicle operations over terrain not subject to repeated traffic and where no roads, routes, well-worn trails or man-made improvements exist.

Speed on Primary Road Sustained speed on paved or improved road with firm base.

Speed X-Country Sustained speed in open & rolling terrain, free of any physical entity that oppose or deter passage or progress, or impedes mobility in any other way.

Range Distance vehicle can travel using onboard intelligence.

Obstacle shall be defined as any impediment in the vehicle path, that the vehicle is incapable of breaching. Obstacles include, but are not limited to, other vehicles, debris and vegetation (rocks, trees, shrubs, structures), negative obstacles (pot holes, craters), and water deeper than 6 inches. Water depth less than 6 inches shall not be considered an obstacle.

Positive obstacles size Maximum height of obstacle above ground plane.

Negative obstacles size Depth, Width, and Span of obstacle in direction of travel (expressed as DxWxS)

Daytime/Nighttime. Daytime shall be defined as one (1) hour after sunrise until one (1) hour before sunset. Nighttime shall be defined as one (1) hour after sunset until one (1) hour before sunrise.

Vetronics Vehicle Electronics. The Vetronics system of a combat vehicle refers to all of the electronics used to integrate the electrical/electronic subsystems and components of the vehicle.

3.2 Functional and performance requirements

3.2.1 UGV Safe Operations Performance Requirements

3.2.1.1 The UGV Safe Operations testbed shall operate autonomously on paved roads (0 to +2% grade) at a sustained speed of 45kph

3.2.1.2 The UGV Safe Operations testbed shall autonomously traverse complex terrain at an average speed of 8kph. Complex terrain is defined as a region having irregular topography and vegetation including variations in land use, such as urban, rural, irrigated, and unirrigated.

3.2.1.3. The UGV Safe Operations testbed shall detect, track, and predict path of personnel walking and running at speeds up to 10 kph at a range of 50 meters, or as appropriate to avoid collisions (whichever is greater).

3.2.1.4 The UGV Safe Operations testbed shall detect, track, and predict path of oncoming vehicles that are moving at speeds up to 80 kph, with a range of 50 meters or as appropriate to avoid collisions (whichever is greater) with a false alarm rate of less than 1/hour. Minimum detectable oncoming vehicle dimensions shall be 1 meter in height and 0.5 meters in width.

3.2.1.5 The UGV Safe Operations system shall detect and avoid animals (1 meter height) which are moving at speeds up to 10kph.

3.2.1.6 The UGV Safe Operations system shall avoid mobility hazards (trees, 0.7m trenches, wire).

3.2.1.7 The UGV Safe Operations system shall utilize the GFX Human Robot Interaction (HRI) component.

3.2.1.7.1 The UGV Safe Operations system shall provide obstacle location information capable of being displayed on the Operator Control Unit as a visual aid during tele-operation.

3.2.1.8 The system software shall be designed to maximize reusability in other programs through the use of Application Programmers Interfaces (APIs).

3.2.1.9 The UGV Safe Operations system shall be tested on a robotic platform that can be operated with or without a human safety operator, and shall be transferable to the TARDEC Robotic Follower, Crew Automation and integration Testbed, ARV Robotic Technologies testbed, and Demo III XUV vehicles.

3.2.1.10 The system shall be ruggedized, reliable, robust, and suitable for use in an outdoor environment, such as Ft. Indiantown Gap.

3.2.1.11 Data Capture

3.2.1.11.1 The UGV Safe Operations testbed shall provide a data logging capability to gather all onboard vehicle data (e.g. system performance, component latency, etc.) and present the data through the test and maintenance interface.

3.2.2 Functional Requirements for UGV Safe Operations system

3.2.2.1 Autonomous Operation. The UGV Safe Operations testbed shall operate autonomously in a series of Engineering Evaluation Tests with associated baseline and final metrics to be jointly agreed between the COR and GDRS.

3.2.2.2 The UGV Safe Operations system shall utilize a FCS Autonomous Navigation System (ANS).

3.2.2.3 The UGV Safe Operations system shall be able to implement ARL Robotics CTA developed UGV Safe Operation software

3.2.2.4 Communications. The communication system shall be compatible with current TARDEC robotic assets such as the Crew Automation and integration Testbed (CAT), the Robotic Follower (RF), the Near Autonomous Unmanned System (NAUS) testbed, and the eXperimental Unmanned Vehicle (XUV), which are all currently using Firetide Mesh Network radios.

3.2.2.5 Through the integration of the FCS Autonomous Navigation System, the UGV Safe Operations system shall have the capability to operate on roads and road lanes and shall operate on the correct side of the road according to US traffic regulations.

3.2.3 Mobility

3.2.3.1 Terrain. The systems shall be capable of operating in military significant terrain types that include: open and rolling, vegetated, cross-country, rugged, complex, dynamic, and highly cluttered.

3.2.3.2 Drive-by-wire. The systems shall be configured such that all automotive functions can be controlled via electrical signal inputs.

3.2.3.3 Towing. The systems shall have attachments in the front and rear of the vehicle, which allow for the two-point attachment of a tow bar.

3.2.3.4 Position/Navigation. The systems shall contain a Position/Navigation (Pos/Nav) system. The Pos/Nav system shall provide continuous, accurate heading and position data necessary to meet all performance requirements.

3.2.4 Core Vetronics. Core Vetronics provides the flexible and expandable infrastructure required by the majority of ground combat vehicles, both manned and robotic. Core Vetronics facilitates commonality within and across vehicles resulting in a reduction of acquisition, operational and support costs. The Core Vetronics design shall take into consideration the following open system design characteristics:

- Open Interface Standards
- Commonality
- Reusability
- Fault Tolerance
- Upgradeability

3.2.4.1 Computing Resources. Computer Resources provides distributed intelligent resources, data processing, and control capabilities to enable the vehicle to execute its mission. It consists of hardware and software resources.

3.2.4.1.1 Hardware Resources. Hardware resources (General Purpose Processors, Graphics Display Processors, Input/Output Interfaces, etc) shall be developed to maximize overall system speed through the use of multicore and/or parallel processing.

3.2.4.1.2 Software Resources. Software resources (operating systems, middleware, application software, etc.) shall be developed to maximize overall system speed.

3.2.4.2 System Networking. System networking consists of communications network(s) required to distribute digital data, video, and audio throughout the vehicle. The communications networks shall support the real-time information transfer and shall be fault tolerant. System networking shall comply with the open system standards. In addition, the system networking design shall consider emerging wireless technologies such as Ultra Wide Band (UWB).

3.2.4.3 System Power. System Power provides electrical power to all the electrical/electronic subsystems of the vehicle. It provides for electrical power generation, distribution, conversion, regulation, and load control. System power shall comply with the open system standards.

3.2.4.3.1 NATO Slave Receptacle. The systems shall have a standard NATO electrical slave receptacle on the exterior of the vehicle and covered to prevent damage. The slave connector shall contain an isolation relay to prevent battery drainage if power is not applied to the receptacle. At a minimum the NATO slave interface shall support:

Re-charging of all vehicle batteries
Jump Starting by other compatible vehicles
Powering all electrical systems with an external power source

3.2.5 Reliability

3.2.5.1 The system shall complete the entire test and experimentation activities without experiencing any critical software or hardware failures that would result in a stoppage in the test and experimentation activities for more than 24 hours.

3.2.6 Maintainability

3.2.6.1 The systems shall be designed for ease of repair by using Line Replaceable Units (LRUs) and Shop Replaceable Units (SRUs).

3.2.6.2 Standard Tools. The systems maintenance shall use common tools and shall not require the use of special tools not currently available.

3.2.7 Environmental conditions

3.2.7.1 Vehicle Operation. The systems shall be fully operable for use in a military operational training environment, such as Ft. Indiantown Gap, PA. The system shall be fully operational during day and night.

3.2.7.2 Hot and Cold Protection. The systems shall provide cooling to prevent heat stress. The UGV Safe Ops testbed systems shall be operable between the temperatures of 20F and 120F. The systems shall provide adequate ventilation and airflow to prevent local hot spots within the vehicle.

3.2.8 Transportability - The UGV Safe Operations system shall be C-130 transportable and be in the FCS MULE/ARV weight class.

3.2.9 Materials and processes

3.2.9.1 Materials. All materials shall be new and unused. The only exceptions to this requirement are those components that make up the Government Furnished Property (GFE/P/S).

3.2.9.2 Material Finish. Finished items should bear no raw, sharp, or rough edges on any parts. All exposed edges and corners shall be rounded to a minimum of 0.76 mm (0.03 in.) radius. Sharp edges and corners present a personnel safety hazard or potential damage to equipment during usage shall be suitably protected or rounded to a minimum radius of 12.7 mm (0.5 in).

3.2.9.3 Radioactive Material. Radioactive material shall not be incorporated into the UGV Safe Operations system. Radioactive material is defined as any material with a specific activity greater than 0.02 micro curies per gram or with an activity exceeding 0.01 micro curies for any part of any component.

3.2.9.4 Asbestos. Asbestos material shall not be incorporated into the UGV Safe Operations system.

3.2.9.5 Chlorofluorocarbon (CFC). Class 1 Ozone depleting substances shall not be incorporated in or used in the development, integration or fabrication of the UGV Safe Operations components or system.

3.2.9.6 Toxic Gases

3.2.9.7 Carbon Monoxide. System maintenance personnel shall not be exposed to concentrations of Carbon Monoxide (CO) in excess of values which will result in carboxyhemoglobin (COHB) levels in their blood of more than 10%.

3.2.9.8 Other Toxic Gases. Other gases will be limited to concentrations not to exceed those specified in the latest publication of the Threshold Limit Values for Chemical Substances in Work Air by the American Conference of Governmental Industrial Hygienists.

3.2.10 Electromagnetic radiation

3.2.10.1 Electromagnetic environment effects. All contractor-supplied systems electrical and electronic systems shall be designed to operate without causing or suffering from electromagnetic interference, MIL-STD-461 shall be used as a guide.

3.2.11 Nameplates or product markings

3.2.11.1 The vehicle shall be equipped with instructions, plates or diagrams. Labels, legends, placards, signs and markings shall conform to Army standard marking and identification requirements. All vehicles procured, developed or used under this effort shall clearly display TARDEC logo on both sides of the vehicle.

3.2.12 Safety

3.2.12.1 The system shall minimize exposure of the crew and maintenance personnel to safety hazards during its use. MIL-STDs 454, 882, 1472 and 1474, and Title 29 Code of Federal Regulations, Chapter XVII, part 1910, Occupational Safety and Health Administration, shall be used as guidance. The systems shall not contain any uncontrolled safety hazards. Exposed edges and corners shall be rounded sufficiently to minimize lacerations and puncture hazards. Adequate safeguards shall be installed to prevent inadvertent entrapment of body parts and clothing in moving parts of the systems or its attachments. Equipment necessary for safe mounting, dismounting and storage of attachments and components shall be provided. The safety operator shall be protected from injury from hot hydraulic fluid caused by ruptured hydraulic lines and reservoirs if present. The systems must be safely operable in mixed forces (mounted and dismounted, manned and unmanned) in accordance with MIL-STD-1180.

3.2.12.2 Hot Surfaces. Personnel shall not be exposed to any surface temperature greater than 60 degrees C (140 degrees F).

3.2.12.3 Mechanical Safety. The contractor shall provide both a manual and remote kill switch for each system that shall stop the system in case of a malfunction/emergency during operation. The manual switches shall be readily accessible to persons in the immediate area of the vehicle, however can be disabled in order to test the system safety as it will be implemented for an actual fielded system as described in section C.6.1.1 of the scope of work. The remote switch shall be operable at a distance of no less than 1 kilometer, when line-of-sight can be maintained to the vehicle. Total system latency not to exceed 500msec from time of request to brake implementation.

3.2.12.4 Safeguards. Safeguards shall be installed to prevent inadvertent entrapment of body parts and clothing in moving parts.

3.2.12.5 Mechanical Interconnections. The design shall provide positive means to prevent the inadvertent reversing or mismatching of fittings; couplings; fuel; oil; hydraulic and pneumatic lines; mechanical linkage; and instrument leads and electrical connections.

3.2.12.6 The systems shall be equipped with a fire suppression system. The fire extinguishing system shall be capable of extinguishing Petroleum, Oil, and Lubricant (POL) fires. The system shall be manual. The system shall have manual activation from the exterior of the vehicle.

4 SYSTEM VERIFICATION

4.1 Requirements Verification.

4.1.1 Responsibility for Compliance.
All items must meet requirements of sections 3.1 and 3.2. The absence of any inspection requirements in the specification shall not relieve the contractor of the responsibility of ensuring that all products or supplies submitted to the Government for acceptance comply with all requirements of the contract.

4.1.2 Government Verification.
All quality assurance operations performed by the contractor will be subject to Government verification at unscheduled intervals. Verification will consist of (a) surveillance of the operation to determine that practices, methods, and procedures of the written quality assurance system plan are being properly applied, and (b) Government product inspection to measure the quality of the product offered for acceptance. Deviation from the prescribed or agreed upon procedures, or instances of poor practices which might have an adverse effect upon the quality of the product will immediately be called to the attention of the contractor. Failure of the contractor to promptly correct deficiencies shall be cause for suspension of acceptance until corrective action has been made, or until the conformance of the product to prescribed criteria has been demonstrated.

5 Reserved

6 NOTES
6.1 Abbreviations and Acronyms

AMPS	Advanced Mobile integrated Power System
ANS	Autonomous Navigation System
API	Application Programmers Interface
ART	ARV Robotic Technologies
ARV	Armed Robotic Vehicle
ATR	Automatic/Aided Target Recognition
BIT	Built In Test
CAT	Crew-integration and Automation Testbed
CBIT	Continuous BIT
CDRL	Contract Data Requirements List
CFC	Chlorofluorocarbon
CO	Carbon Monoxide
COHB	Carboxyhemoglobin
COTS	Commercial off the shelf
DC	Direct Currant
DCA	Diagnostic Connector Assembly
DODISS	Department of Defense Index of Specifications and Standards
FCS	Future Combat Systems
GFE/P/S	Government Furnished Equipment/Property/Software
HDBK	Handbook
HRI	Human Robot Interaction
IBIT	Initiated BIT
IR	Infra Red
JROC	Joint Requirements Operational Capabilities
JTA-AJROC	Joint Technical Architecture - Army Joint Requirements Operational Capabilities
LRUJTA-A	Line Replaceable Units Joint Technical Architecture - Army
MGVLRU	Manned Ground Vehicle Line Replaceable Units
MILMGV	Military Manned Ground Vehicle
MOUTMIL	Military Operations in Urban Terrain Military
NATOMOUT	North Atlantic Treaty Organization Military Operations in Urban Terrain
OENATO	Operating Environment North Atlantic Treaty Organization
ORDOE	Operational Requirements Document Operating Environment
OSHAORD	Occupational Safety & Health Administration Operational Requirements Document
PCDOSHA	Procurement Control Document Occupational Safety & Health Administration
POLPCD	Petroleum, Oil, and Lubricant Procurement Control Document
RF	Robotic Follower
RSTAPOL	Reconnaissance, Surveillance and Target Acquisition Petroleum, Oil, and Lubricant
SBITRSTA	Startup BIT Reconnaissance, Surveillance and Target Acquisition
SRUSBIT	Shop Replaceable Units Startup BIT
STDSRU	Standard Shop Replaceable Units
STOSTD	Science and Technology Objective Standard
TAC-C	Tactical Autonomous Combat-Chassis
TARDECSTO	Tank-Automotive Armaments Research Development and Engineering Center Science and Technology Objective
UGVTARDEC	Unmanned ground Vehicle Tank-Automotive Armaments Research Development and Engineering Center
USUGV	United States Unmanned ground Vehicle
UWBUSUGV	Ultra Wide Band United States Unmanned ground Vehicle
WSTAWGUWBUS	Weapon System Technical Architecture Working Group Ultra Wide Band United States
WSTAWGUWB	Weapon System Technical Architecture Working Group Ultra Wide Band
WSTAWG	Weapon System Technical Architecture Working Group
XUV	Demo III eXperimental Unmanned Vehicle

Section J, Attachment 2
UGV Safe Operations Contract
Work Breakdown Structure & Dictionary

Section A - Work Breakdown Structure (WBS):

Item	Contract Reference
1. UGV Safe Operations	C.1
1.1 UGV Safe Operations System	J.1.2.X
1.1.1 Platform and Structures	C.5, J.1.2.X
1.1.2 Core Vetronics	J.3.2.4.X
1.1.2.1 Computer Resources	J.3.2.4.1.X
1.1.2.2 Data Control and Distribution	C.8.3
1.1.2.3 Power Generation and Management	J.3.2.4.3.X
1.2 Program Management	C.3.X
1.2.1 Program Planning	C.3.6.X
1.2.2 Program Tracking	C.3.4
1.2.3 Contract Management	C.3.6.X
1.2.4 IPT Management	C.3.2.X
1.3 System Engineering	C.4.X
1.3.1 Specifications and ICDs	C.4.1.X
1.3.2 Platform and Sensor Analysis	J.3.2.2.2
1.3.3 Safety	C.6.1.1, C.7
1.3.4 Engineering Reviews	C.3.2.2, C.3.7, C.3.7.2
1.3.5 Architecture	J.3.2.4.X
1.3.6 Development Environment	C.3.3, C.3.5.X
1.3.6.1 IDE	C.3.3
1.3.6.2 M&S Environment	C.3.5.2
1.3.6.3 Software Development Environment	C.3.5
1.3.7 Technical Trade Studies	C.9.2.1
1.4 System Test and Evaluation	C.6.X
1.4.1 Developmental Testing	C.6.2.3
1.4.2 Engineering Evaluation Testing	C.6.2.1, C.6.2.2
1.4.3 Test and Evaluation Support	C.6.3.1, C.6.4.X
1.4.3.1 Test and Measurement Equipment	C.6.3.X
1.4.3.2 Support and Handling Equipment	C.6.3.X
1.4.3.3 Spares and Repair Parts	C.6.3.X
1.4.4 Test Site Coordination/Rental	C.6.3.X
1.4.5 Demonstrations	C.6.1.X
1.5 Training	C.9.4
1.5.1 Services	C.3.7.2
1.6 Data	C.5.3.2, C.6.4.5
1.7 On-site Support	C.4.1.5, C.9.4

Section B - WBS Dictionary:

1. UGV Safe Operations
The equipment, data, services, and facilities required to develop, test and demonstrate the UGV Safe Operations system.

1.1 UGV Safe Operations System
The equipment and services required to develop, test and demonstrate the UGV Safe Operations vehicle system.

1.1.1 Platform and Structures
The mobile element of the UGV Safe Operations system embodying means for performing operational missions and all structures required to support equipment within the chassis.

1.1.2 Core Vetronics
The computer processing, vehicle control interface, and data and power distribution infrastructure required for developing, testing and demonstrating the UGV Safe Operations system.

1.1.2.1 Computer Resources
Computer Resources provides distributed intelligent resources, data processing, and control capabilities for the Information, High End Real-Time, High Power Load Management, and Automotive and Utility Systems to enable the vehicle to execute its mission. It consists of

the processing elements, operating system software, and application software required for developing, testing and demonstrating the UGV Safe Operations system.

1.1.2.2 Data Control and Distribution
Data Control and Distribution provides the capability for efficient transfer of all electrical control signals and data within subsystems and within the vehicle. It consists of communications network(s) to distribute digital data, video, and audio throughout the vehicle, that are required for developing, testing and demonstrating the UGV Safe Operations system.

1.1.2.3 Power Generation and Management
Power Generation and Management provides electrical power to all the electrical/electronic subsystems of the vehicle. It provides for electrical power generation, distribution, conversion, regulation, and load control. It also manages vehicle-wide power consumption, including prioritized power allocation to essential functions for cases of emergency, failure, or battle damage as required for developing, testing and demonstrating the UGV Safe Operations system.

1.2 Program Management
The business and administrative planning, organizing, directing, coordinating, controlling, and approval actions designated to accomplish overall program objectives which are not associated with specific hardware elements and are not included in systems engineering.

1.2.1 Program Planning
The planning actions required to accomplish overall program objectives

1.2.2 Program Tracking
The actions required to track progress in accomplishing the overall program objectives against the program plan.

1.2.3 Contract Management
The actions required to manage the contractual actions with the government as well as contractual actions with subcontractors.

1.2.4 IPT Management
The actions designated to manage the Integrated Product Teams.

1.3 Systems Engineering
The technical and management efforts of directing and controlling a totally integrated engineering effort of a system or program. System engineering includes system definition, overall system design, design integrity analysis, system optimization, system/cost effectiveness analysis, and intra-system and inter-system compatibility assurance, etc.; the integration and balancing of reliability, maintainability, producibility, safety, human health, environmental protection, and survivability; security requirements, configuration management and configuration control; quality assurance program, value engineering, preparation of equipment and component performance specifications, design of test and demonstration plans; determination of software development or software test facility/environment requirements.

1.3.1 Specifications and ICDs
The actions designated to specify performance of the UGV Safe Operations subsystems and to develop and manage interfaces between the UGV Safe Operations subsystems.

1.3.2 Platform and Sensor Analysis
The actions designated to analyze the UGV Safe Operations system performance utilizing potential sensors.

1.3.3 Safety
The special equipment (hardware and software) to be utilized in the UGV Safe Operations system to ensure the safety of the systems, their operators, testers and observers.

1.3.4 Engineering Reviews
The actions designated to plan and conduct the engineering reviews.

1.3.5 Architecture
The architecture is a description, including graphics, of the systems and interconnections providing for, or supporting, total system functions. The architecture includes the physical connection, location, and identification of key nodes (including materiel item nodes), circuits, networks, other compatible platforms, etc., and specifies system and component performance parameters (e.g., mean time between failure, maintainability, and availability).

1.3.6 Development Environment
The special equipment (hardware and software) to be utilized to conduct software development and data communication activities.

1.3.6.1 IDE
The equipment (hardware and software) used to develop and maintain an on-line, integrated data environment for purposes of sharing information specifically intended for use by the Government/Contractor Integrated Process Teams (IPTs).

1.3.6.2 M&S Environment
A dynamic model of the UGV Safe Operations system shall be developed. The model shall have the capability to accurately model component changes to UGV Safe Operations system and predict impact on total system.

1.3.6.3 Software Development Environment
The software tools required to develop and debug the software necessary to demonstrate the UGV Safe Operations system.

1.3.7 Technical Trade Studies
An objective evaluation of alternative requirements, architectures, design approaches, or solutions shall be performed when there are multiple viable approaches to implant in UGV Safe Operations system design or components.

1.4 System Test and Evaluation
The use of prototype, production, or specifically fabricated hardware/software to obtain or validate engineering data on the performance of the UGV Safe Operations system.

1.4.1 Developmental Testing
Non-formal test and evaluation conducted to demonstrate that the engineering design and development process is complete, the design risks have been minimized, and that the system will meet all specifications.

1.4.2 UGV Safe Operations system Engineering Evaluation Testing
Formal testing of the UGV Safe Operations vehicle to demonstrate conformance to all related performance objectives.

1.4.3 Test and Evaluation Support
The support elements necessary to operate and maintain, during all test and evaluation, UGV Safe Operations system and subsystems which are not consumed during the testing phase and are not allocated to a specific phase of testing.

1.4.3.1 Test and Measurement Equipment
The peculiar or unique testing and measurement equipment which allows an operator or maintenance function to evaluate operational conditions of the UGV Safe Operations system or related equipment by performing specific diagnostics, screening or quality assurance effort at an organizational, intermediate, or depot level of equipment support.

1.4.3.2 Support and Handling Equipment
The deliverable tools and handling equipment used for support of the UGV Safe Operations system.

1.4.3.3 Spares and Repair Parts
The deliverable spare components, assemblies and subassemblies used for replacement purposes in the UGV Safe Operations system end item.

1.4.4 Test Site Coordination/Rental
The coordination with and rental of test facilities required for performance of the all tests necessary to prove the design and reliability of the UGV Safe Operations system or subsystems.

1.4.5 Demonstrations
The actions designated to conduct demonstrations of the UGV Safe Operations system in conjunction with experiments, at trade shows or at the contractor facility.

1.5 Training
Deliverable training services, devices, accessories, aids, equipment, and parts used to facilitate instruction through which personnel will learn to operate and maintain the UGV Safe Operations system with maximum efficiency.

1.5.1 Services
Deliverable services, accessories, and aids necessary to accomplish the objectives of training, including the renting or leasing of facilities.

1.6 Data
The deliverable data required to be listed on a Contract Data Requirements List, DD Form 1423.

1.7 On-site Support
The services, accessories, and equipment necessary to support the UGV Safe Operations system at TARDEC for one year following delivery.

Section H, Attachment 1

UGV Safe Operations Contract

Government Furnished Property

1. Items to be utilized by the contractor at the contractors discretion.

The following items will be supplied by the Government to the contractor by the specified milestones to facilitate the development of the UGV Safe Operations System.

Item	Milestone
Robotic Collaboration Dismounted OCU	Sept 2007

2. Items that the contractor is required to utilize unless results of their trade studies indicate a technically superior or more cost-effective approach.

The following items will be supplied by the Government to the contractor by the specified milestones for integration into the UGV Safe Operations System.

Item	Milestone
ARL Robotics CTA Algorithms	Award and updates as available.
Robotic Follower vehicle	Exercise of optional SOW C.10.1
Crusher Hybrid vehicle	Exercise of optional SOW C.10.2